**Features used for fitting a HMM model**

* MCQ.TOT.FACT: compute MCQ.TOT as EQT.CO + EQT.IN+VEQ.CO+VEQ.IN, then discretize it as follows: all instances with MCQ.TOT == 0 put in one group; instances with MCQ.TOT >= 1 split into quantiles; then, create a factor variable MCQ.TOT.FACT with 5 levels: one for instances with MCQ.TOT == 0, and 4 for the 4 quantile groups
* MCQ.PERC.CO.FACT: percentage of correctly solved MCQs; compute MCQ.PERC.CO as ((EQT.CO+VEQ.CO)/MCQ.TOT)\*100; then discretize it into 5 level factor variable: one level for the situation when no MCQ was solved (no MCQs related activities) and the other 4 corresponding to the 4 quartiles of MCQ.PERC.CO
* EXC.TOT.FACT: compute EXC.TOT = EXC.CO + EXC.IN; then discretize analog to MCQ.TOT.FACT
* EXC.PERC.CO: compute (EXC.CO\*100)/EXC.TOT, the discretize analog to MCQ.PERC.CO.FACT
* VID.TOT.FACT: compute VID.TOT = VID.PL + VID.PA, then discretize analog to MCQ.TOT.FACT
* MCQ.SH.TOT.FACT: compute MCQ.SH.TOT = EQT.SH + VEQ.SH, then analog to MCQ.TOT.FACT
* TG.DENS.FACT: transition graph density; discretized like the variables described above
* MC.EVAL.FACT: compute DBOARD.VIEW, then discretize analog to MCQ.TOT.FACT
* CONTENT.ACCESS.FACT: discretize analog to MCQ.TOT.FACT

**Examining HMM models with different numbers of states**

***nstates = 3***

> print(mod.fit)

Convergence info: Log likelihood converged to within tol. (relative change)

'log Lik.' -36823.22 (df=116)

AIC: 73878.44

BIC: 74589.15

***nstates = 4***

> print(mod.fit)

Convergence info: Log likelihood converged to within tol. (relative change)

'log Lik.' -35937.09 (df=159) (increase: 886)

AIC: 72192.19 (drop: 1686)

BIC: 73166.35 (drop: 1422)

***nstates = 5***

> print(mod.fit)

Convergence info: Log likelihood converged to within tol. (relative change)

'log Lik.' -34999.3 (df=204) (increase: 938)

AIC: 70406.59 (drop: 1786)

BIC: 71656.46 (drop: 1510)

***nstates = 6***

> print(mod.fit)

Convergence info: Log likelihood converged to within tol. (relative change)

'log Lik.' -34609.39 (df=251) (increase: 390)

AIC: 69720.78 (drop: 686)

BIC: 71258.61 (drop: 398)

**Model with 5 states**

This model is chosen since the highest increase in log-likelihood and the largest drop in AIC and BIC values are present between the models with 4 and 5 states

**STATE 1 – Low activity**

MCQ.TOT.FACT – no interaction with formative assessment items (MCQs)

"0" "Q1" "Q2" "Q3" "Q4"

St1 1 0.00000000 0.0000000 0.0000000 0.00000000

MCQ.PERC.CO.FACT – N/A

"0" "Q1" "Q2" "Q3" "Q4"

St1 1.00000000 0.0000000 0.0000000 0.0000000 0.0000000

EXC.TOT.FACT – small amount of activity related to summative assessment (exercises); the counts are predominantly in the 1st quartile

"0" "Q1" "Q2" "Q3" "Q4"

St1 0.00000000 0.76552528 0.2247774 0.004355033 0.005342247

EXC.PERC.CO.FACT – exercises are predominantly correctly solved; percentages of correctly solved exercises are predominantly in the 4th quartiles

"0" "Q1" "Q2" "Q3" "Q4"

St1 0.00000000 0.0000000 0.0003416964 0.2171969 0.782461407

VID.TOT.FACT – very low chance of video-related activities; even when present (p~0.2), the counts tend to be below the median

"0" "Q1" "Q2" "Q3" "Q4"

St1 0.8048994 0.06642970 0.061838649 0.04005181 0.026780467

MCQ.SH.TOT.FACT – no requests for showing the answers to formative assessment items (MCQs)

"0" "Q1" "Q2" "Q3" "Q4"

St1 1.0000000 0.0000000 0.0000000 0.0000000 0.00000000

TG.DENS.FACT – density of the transition graph tends to be low, below the median, and mostly in Q1, suggesting that in this state, the students are not experiment much with different learning strategies (as the values of the other variables also indicate)

"0" "Q1" "Q2" "Q3" "Q4"

St1 0.014686633 0.5219263 0.30332469 0.14649864 0.013563708

MC.EVAL.FACT – metacognitive evaluation activities are rarely present; even when present (p~0.2), the counts tend to be below the median

"0" "Q1" "Q2" "Q3" "Q4"

St1 0.7864956 0.08962609 0.07428075 0.030275057 0.019322457

CONTENT.ACCESS.FACT – access to the lecture materials is largely present (p~0.7), though the activity level is low, as the counts tend to be below the median, most often in Q1

"0" "Q1" "Q2" "Q3" "Q4"

St1 0.3158482607 0.31801608 0.16933459 0.13287150 0.06392957

**STATE 2 – High activity**

MCQ.TOT.FACT – lots of activity associated with formative assessment items (MCQs); the counts are mostly above the median, equally distributed between the 3rd and 4th quartiles, though there is a non-negligible probability of the counts being in Q2

"0" "Q1" "Q2" "Q3" "Q4"

St2 0 0.05589008 0.2222272 0.3331152 0.38876749

MCQ.PERC.CO.FACT – percentages of correctly solved formative assessment items tend to be uniformly distributed across the quartiles (Q1-Q4)

"0" "Q1" "Q2" "Q3" "Q4"

St2 0.00000000 0.2308322 0.2769590 0.2975229 0.1946859

EXC.TOT.FACT - fair amount of activity associated with the summative assessment items (exercises); the counts tend to be uniformly distributed across the four quartiles (Q1-Q4), though there is somewhat higher chance for the counts to be above the median

"0" "Q1" "Q2" "Q3" "Q4"

St2 0.00105765 0.19964338 0.2766260 0.278275533 0.244397394

EXC.PERC.CO.FACT - percentages of correctly solved summative assessment items (exercises) tend to be more-or-less uniformly distributed across the quartiles, though probabilities are somewhat higher for Q4, and lower for Q1

"0" "Q1" "Q2" "Q3" "Q4"

St2 0.00105765 0.1559864 0.2438545783 0.2829001 0.316201295

VID.TOT.FACT - fair amount of activity associated with the course videos; the counts are rather uniformly distributed across the four quartiles, though probabilities are somewhat higher for the two upper quartiles (Q3, Q4)

"0" "Q1" "Q2" "Q3" "Q4"

St2 0.0476824 0.19017480 0.192530649 0.27027617 0.299335981

MCQ.SH.TOT.FACT - requests for showing the answers of MCQs were largely present (p~0.75); the counts are mostly above the median

"0" "Q1" "Q2" "Q3" "Q4"

St2 0.2515597 0.1499383 0.1294465 0.2050732 0.26398222

TG.DENS.FACT - density of the transition graph tends to be high, mostly in Q4, suggesting that in this state, the students are experimenting with different learning strategies (as the values of the other variables also indicate)

"0" "Q1" "Q2" "Q3" "Q4"

St2 0.006003141 0.0000000 0.02774135 0.24658287 0.719672638

MC.EVAL.FACT – metacognitive evaluation activities are mostly present (p~0.6); counts are uniformly distributed across the quartiles

"0" "Q1" "Q2" "Q3" "Q4"

St2 0.4053921 0.14595249 0.12471907 0.135618337 0.188317985

CONTENT.ACCESS.FACT – considerable interaction with the lecture materials, counts are mostly above the median, most often in Q4

"0" "Q1" "Q2" "Q3" "Q4"

St2 0.0004601325 0.06084225 0.20131756 0.29541498 0.44196508

**STATE 3 - Disengaged**

MCQ.TOT.FACT – no interaction with formative assessment items (MCQs)

"0" "Q1" "Q2" "Q3" "Q4"

St3 1 0.00000000 0.0000000 0.0000000 0.00000000

MCQ.PERC.CO.FACT – N/A

"0" "Q1" "Q2" "Q3" "Q4"

St3 1.00000000 0.0000000 0.0000000 0.0000000 0.0000000

EXC.TOT.FACT – almost no interaction with summative assessment items (exercises)

"0" "Q1" "Q2" "Q3" "Q4"

St3 0.95633188 0.04366812 0.0000000 0.000000000 0.000000000

EXC.PERC.CO.FACT – in those rare cases when exercises are done (p~0.05), they are done incorrectly

"0" "Q1" "Q2" "Q3" "Q4"

St3 1.00000000 0.0000000 0.0000000000 0.0000000 0.000000000

VID.TOT.FACT – vary small chance of interacting with the course videos (p~0.06)

"0" "Q1" "Q2" "Q3" "Q4"

St3 0.9388646 0.03056769 0.008733624 0.01310044 0.008733624

MCQ.SH.TOT.FACT - no requests for showing the answers to formative assessment items (MCQs)

"0" "Q1" "Q2" "Q3" "Q4"

St3 1.0000000 0.0000000 0.0000000 0.0000000 0.00000000

TG.DENS.FACT – over 50% chance of complete inactivity; when active (p~0.46), the transition graph density is in Q1, indicating very low level of experimenting with different learning strategies (as the values of the other variables also demonstrate)

"0" "Q1" "Q2" "Q3" "Q4"

St3 0.532751092 0.3668122 0.07423581 0.01746725 0.008733624

MC.EVAL.FACT – very small chance of metacognitive activities (p~0.1)

"0" "Q1" "Q2" "Q3" "Q4"

St3 0.9039301 0.03493450 0.04366812 0.008733624 0.008733624

CONTENT.ACCESS.FACT – low chance of access to the lecture materials; when present (p~0.36), the counts are expected to be below the median, mostly in the 1st quartile

"0" "Q1" "Q2" "Q3" "Q4"

St3 0.6375545852 0.24454148 0.07860262 0.02183406 0.01746725

**STATE 4 – Moderate activity**

MCQ.TOT.FACT – moderate amount of activities associated with formative assessment items (MCQs), counts tend to be below the median, with the highest chance of being in Q1

"0" "Q1" "Q2" "Q3" "Q4"

St4 0 0.50174663 0.2599246 0.1462857 0.09204311

MCQ.PERC.CO.FACT - percentages of correctly solved formative assessment items tend to be uniformly distributed across the quartiles (Q1-Q4), though with some slightly higher chance of being at the extremes, that is in Q4 and Q1

"0" "Q1" "Q2" "Q3" "Q4"

St4 0.04270237 0.2795387 0.1876057 0.1994921 0.2906611

EXC.TOT.FACT - fair amount of activity associated with the summative assessment items (exercises); the counts tend to be uniformly distributed across the four quartiles, though there is somewhat higher chance for the counts to be below the median

"0" "Q1" "Q2" "Q3" "Q4"

St4 0.09546186 0.28175725 0.2362983 0.223220008 0.163262559

EXC.PERC.CO.FACT – percentages of correctly solved exercises are rather uniformly distributed across the quartiles

"0" "Q1" "Q2" "Q3" "Q4"

St4 0.09546186 0.2113620 0.2009519879 0.2450288 0.247195344

VID.TOT.FACT - moderate amount of video-related activities; when these activities are present (p~0.7), the counts tend to be below the median

"0" "Q1" "Q2" "Q3" "Q4"

St4 0.3086321 0.23950824 0.181815486 0.13550521 0.134538931

MCQ.SH.TOT.FACT - requests for showing the answers of MCQs were largely present (p~0.73); the counts are mostly below the median

"0" "Q1" "Q2" "Q3" "Q4"

St4 0.2631490 0.3012689 0.2140109 0.1464667 0.07510455

TG.DENS.FACT – density of the transition graph is mostly in the 2nd and the 3rd quartiles, suggesting moderate level of experimenting with different learning strategies

"0" "Q1" "Q2" "Q3" "Q4"

St4 0.059601456 0.1460871 0.37358902 0.34961297 0.071109496

MC.EVAL.FACT - low chance of metacognitive evaluation being present; when present (p~0.2), the counts are expected to be below the median, mostly in the 1st quartile

"0" "Q1" "Q2" "Q3" "Q4"

St4 0.8050488 0.09108158 0.04510610 0.037437350 0.021326130

CONTENT.ACCESS.FACT – moderate amount of access to the lecture materials; counts are mostly below the median, though there is a non-negligible chance higher access levels (i.e., counts being in Q3 or Q4)

"0" "Q1" "Q2" "Q3" "Q4"

St4 0.1646772377 0.27708935 0.24730019 0.20072089 0.11021233

**STATE 5 – Focus on summative assessment**

MCQ.TOT.FACT - no interaction with formative assessment items (MCQs)

"0" "Q1" "Q2" "Q3" "Q4"

St5 1 0.00000000 0.0000000 0.0000000 0.00000000

MCQ.PERC.CO.FACT – N/A

"0" "Q1" "Q2" "Q3" "Q4"

St5 1.00000000 0.0000000 0.0000000 0.0000000 0.0000000

EXC.TOT.FACT - fair amount of activity associated with the summative assessment items (exercises); the counts tend to be above the median

"0" "Q1" "Q2" "Q3" "Q4"

St5 0.00000000 0.12701862 0.2117224 0.297922802 0.363336222

EXC.PERC.CO.FACT – percentages of correctly solved exercises tend to be below the median, mostly in the 1st quartile

"0" "Q1" "Q2" "Q3" "Q4"

St5 0.00000000 0.4295467 0.3455611553 0.2219730 0.002919158

VID.TOT.FACT - very low chance of video-related activities; even when present (p~0.2), the counts tend to be below the median

"0" "Q1" "Q2" "Q3" "Q4"

St5 0.8081013 0.08512905 0.049044463 0.02898881 0.028736416

MCQ.SH.TOT.FACT - no requests for showing the answers to formative assessment items (MCQs)

"0" "Q1" "Q2" "Q3" "Q4"

St5 1.0000000 0.0000000 0.0000000 0.0000000 0.00000000

TG.DENS.FACT – the density of the transition graph tends to be below the median, mostly in Q2, suggesting low level of experimentation with different learning strategies (as the values of the other variables also demonstrate)

"0" "Q1" "Q2" "Q3" "Q4"

St5 0.020062135 0.2855339 0.51372272 0.17545891 0.005222380

MC.EVAL.FACT - very low chance of metacognitive evaluation activities; even when present (p~0.13), the counts tend to be below the median

"0" "Q1" "Q2" "Q3" "Q4"

St5 0.8699566 0.06738630 0.02628763 0.021674145 0.014695314

CONTENT.ACCESS.FACT – the chance of access to the lecture materials is somewhat above 50% (p~0.56), though the activity level is low, as the counts tend to be below the median, most often in Q1

"0" "Q1" "Q2" "Q3" "Q4"

St5 0.4414184145 0.26695920 0.12850886 0.09950578 0.06360775

**Transition matrix**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Low activity | High activity | Disengaged | Moderate activity | Focus on summative assessment |
| Low activity | **0.38** | 0.06 | 0.08 | **0.37** | 0.10 |
| High activity | 0.03 | **0.65** | 0.02 | 0.18 | 0.11 |
| Disengaged | 0.08 | 0.09 | 0.24 | **0.30** | 0.28 |
| Moderate activity | 0.10 | 0.23 | 0.07 | **0.35** | 0.24 |
| Focus on summative assessment | 0.03 | 0.09 | 0.07 | 0.22 | **0.58** |

**Initial state probabilities**

pr1 pr2 pr3 pr4 pr5

0 0 1 0 0

The most probable initial state is *Disengaged*, which is probably expected.

**Number of students per week and per state**

Weeks are given in rows (W2-W13), states are given in columns (S1-S5); below is a figure with the same information presented using stacked barcharts.

=== === === === === ===

\ S1 S2 S3 S4 S5

=== === === === === ===

W2 12 100 40 95 25

W3 9 118 15 109 33

W4 12 118 14 77 63

W5 25 104 16 58 81

W6 6 117 10 139 15

W7 38 82 10 32 123

W8 35 67 11 39 134

W9 31 66 14 32 137

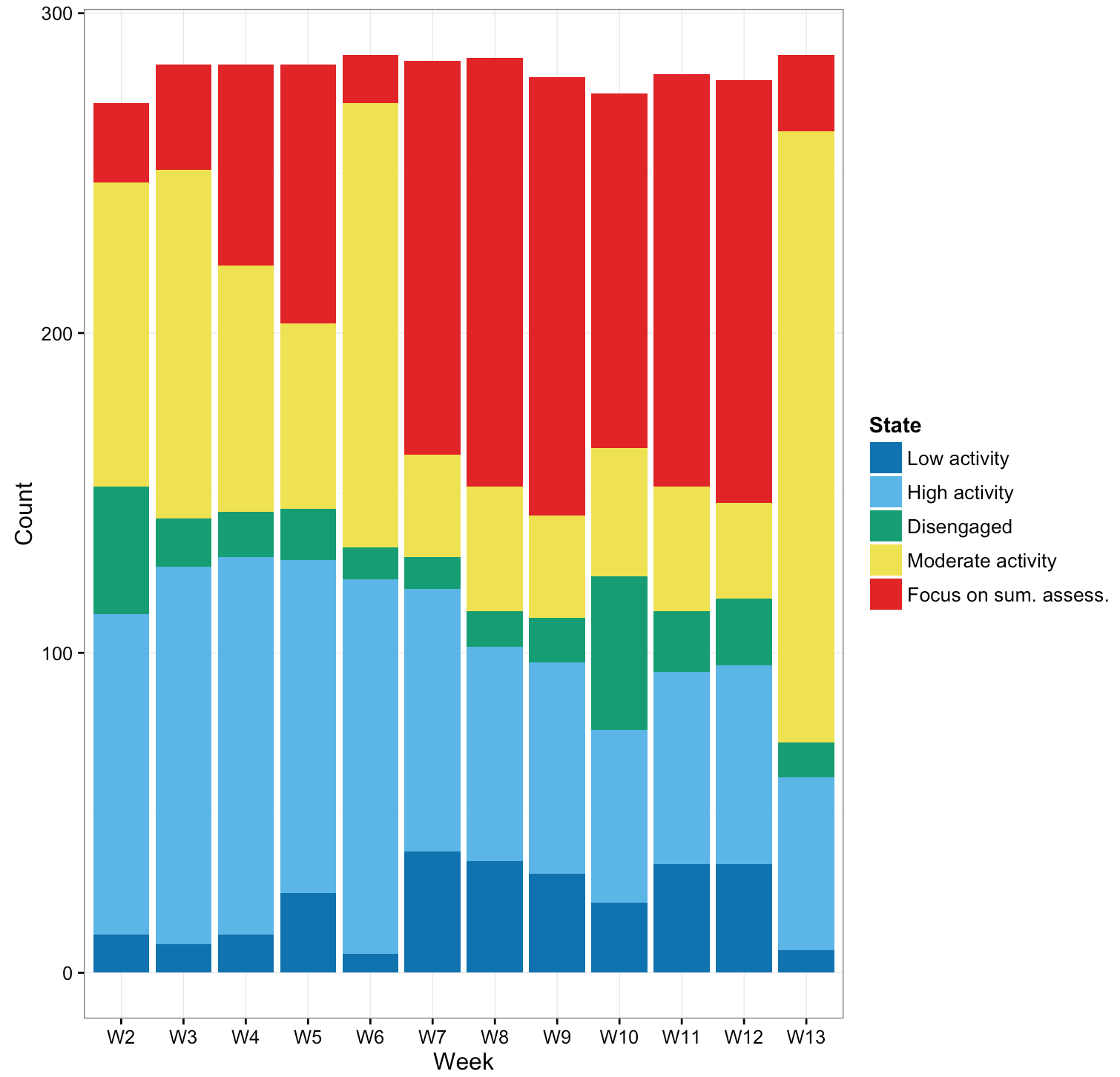
W10 22 54 48 40 111

W11 34 60 19 39 129

W12 34 62 21 30 132

W13 7 54 11 191 24

=== === === === === ===

****

**More detailed interpretation of latent states**

**STATE 1:**

* No interaction with formative assessment items (MCQs)
* Small amount of activity related to summative assessment (exercises); the counts are predominantly in the 1st quartile; exercises are predominantly correctly solved; percentages of correctly solved exercises are predominantly in the 4th quartiles
* Very low chance of video-related activities; even when present (p~0.2), the counts tend to be below the median
* Access to the lecture materials is largely present (p~0.7), though the activity level is low, as the counts tend to be below the median, most often in Q1
* Density of the transition graph tends to be low, below the median, and mostly in Q1, suggesting that in this state, the students are not experiment much with different learning strategies (as the values of the other variables also indicate)
* Metacognitive evaluation activities are rarely present; even when present (p~0.2), the counts tend to be below the median

**Summary: low activity level; focus on lecture materials and summative assessment; seems to correspond to student cluster 4 (clustering based on sequence clusters)**

**STATE 2:**

* Lots of activity associated with formative assessment items (MCQs); the counts are mostly above the median
* Percentages of correctly solved formative assessment items tend to be uniformly distributed across the quartiles (Q1-Q4)
* Requests for showing answers to MCQs largely present (p~0.75); the counts mostly above the median
* Fair amount of activity associated with the summative assessment items (exercises); the counts tend to be uniformly distributed across the four quartiles (Q1-Q4), though there is somewhat higher chance for the counts to be above the median
* Percentages of correctly solved summative assessment items tend to be more-or-less uniformly distributed across the quartiles, though probabilities are somewhat higher for Q4, and lower for Q1
* Fair amount of activity associated with the course videos; the counts are rather uniformly distributed across the 4 quartiles, though probabilities are somewhat higher for the two upper quartiles (Q3, Q4)
* Considerable interaction with lecture materials, counts are mostly above the median, most often in Q4
* Density of the transition graph tends to be high, mostly in Q4, suggesting that in this state, the students are experimenting with different learning strategies (as the values of the other variables also indicate)
* Metacognitive evaluation activities are mostly present (p~0.6); counts are uniformly distributed across the quartiles

**Summary: high activity level; students are engaged with all the course activities and are experimenting with different learning strategies; seems to correspond to student cluster 1 (clustering based on sequence clusters)**

**STATE 3:**

* No interaction with formative assessment items (MCQs)
* Almost no interaction with summative assessment items (exercises); in those very rare cases when exercises are done (p~0.05), they are done incorrectly
* Very small chance of interacting with the course videos (p~0.06)
* Low chance of access to the lecture materials; when present (p~0.36), the counts are expected to be below the median, mostly in the 1st quartile
* Over 50% chance of complete inactivity; when active (p~0.46), the transition graph density is in Q1, indicating very low level of experimenting with different learning strategies (as the values of the other variables also demonstrate)
* Very small chance of metacognitive activities (p~0.1)

**Summary: disengaged; when the activity is present, which is highly unlikely, it is in the form of reading lecture content or solving (incorrectly) summative assessment items**

**STATE 4:**

* Moderate amount of activities associated with formative assessment items (MCQs), counts tend to be below the median, with the highest chance of being in Q1
* Percentages of correctly solved formative assessment items tend to be uniformly distributed across the quartiles, though with some slightly higher chance of being at the extremes, that is in Q4 and Q1
* Requests for showing the answers of MCQs were largely present (p~0.73); the counts are mostly below the median
* Fair amount of activity associated with the summative assessment items (exercises); the counts tend to be uniformly distributed across the quartiles, though there is somewhat higher chance for the counts to be below the median
* Percentages of correctly solved exercises are rather uniformly distributed across the quartiles
* Moderate amount of video-related activities; when these activities are present (p~0.7), the counts tend to be below the median
* Moderate amount of access to the lecture materials; counts are mostly below the median, though there is a non-negligible chance of higher access levels (i.e., counts being in Q3 or Q4)
* Density of the transition graph is mostly in the 2nd and the 3rd quartiles, suggesting moderate level of experimenting with different learning strategies
* Low chance of metacognitive evaluation being present; when present (p~0.2), the counts are expected to be below the median, mostly in the 1st quartile

**Summary: moderate activity level; similar to state 2 - students are engaged with all the course activities and are experimenting with different learning strategies - but with lower activity level; seems to correspond to student cluster 2 (clustering based on sequence clusters)**

**STATE 5:**

* No interaction with formative assessment items (MCQs)
* Fair amount of activity associated with the summative assessment items (exercises); the counts tend to be above the median
* Percentages of correctly solved exercises tend to be below the median, mostly in the 1st quartile
* Very low chance of video-related activities; even when present (p~0.2), the counts tend to be below the median
* The chance of access to the lecture materials is somewhat above 50% (p~0.56), though the activity level is low, as the counts tend to be below the median, most often in Q1
* The density of the transition graph tends to be below the median, mostly in Q2, suggesting low level of experimentation with different learning strategies (as the values of the other variables also demonstrate)
* Very low chance of metacognitive evaluation activities; even when present (p~0.13), the counts tend to be below the median

**Summary: Focus on summative assessment; low engagement with lecture materials and very rarely with the course videos; low level of experimentation with different learning strategies; metacognitive evaluation barely present; seems to correspond to student cluster 3 (clustering based on sequence clusters)**

**Raw output**

> summary(mod.fit)

Initial state probabilties model

pr1 pr2 pr3 pr4 pr5

0 0 1 0 0

Transition matrix

toS1 toS2 toS3 toS4 toS5

fromS1 0.38062127 0.06302472 0.07681432 0.3743825 0.1051572

fromS2 0.03016392 0.65356185 0.02325485 0.1827350 0.1102844

fromS3 0.08425464 0.09237241 0.24017467 0.3006407 0.2825576

fromS4 0.10474866 0.23986427 0.06846844 0.3515543 0.2353643

fromS5 0.03294195 0.09327897 0.06801335 0.2234691 0.5822966

Response parameters

MCQ.TOT.FACT

"0" "Q1" "Q2" "Q3" "Q4"

St1 1 0.00000000 0.0000000 0.0000000 0.00000000

St2 0 0.05589008 0.2222272 0.3331152 0.38876749

St3 1 0.00000000 0.0000000 0.0000000 0.00000000

St4 0 0.50174663 0.2599246 0.1462857 0.09204311

St5 1 0.00000000 0.0000000 0.0000000 0.00000000

MCQ.PERC.CO.FACT

"0" "Q1" "Q2" "Q3" "Q4"

St1 1.00000000 0.0000000 0.0000000 0.0000000 0.0000000

St2 0.00000000 0.2308322 0.2769590 0.2975229 0.1946859

St3 1.00000000 0.0000000 0.0000000 0.0000000 0.0000000

St4 0.04270237 0.2795387 0.1876057 0.1994921 0.2906611

St5 1.00000000 0.0000000 0.0000000 0.0000000 0.0000000

EXC.TOT.FACT

"0" "Q1" "Q2" "Q3" "Q4"

St1 0.00000000 0.76552528 0.2247774 0.004355033 0.005342247

St2 0.00105765 0.19964338 0.2766260 0.278275533 0.244397394

St3 0.95633188 0.04366812 0.0000000 0.000000000 0.000000000

St4 0.09546186 0.28175725 0.2362983 0.223220008 0.163262559

St5 0.00000000 0.12701862 0.2117224 0.297922802 0.363336222

EXC.PERC.CO.FACT

"0" "Q1" "Q2" "Q3" "Q4"

St1 0.00000000 0.0000000 0.0003416964 0.2171969 0.782461407

St2 0.00105765 0.1559864 0.2438545783 0.2829001 0.316201295

St3 1.00000000 0.0000000 0.0000000000 0.0000000 0.000000000

St4 0.09546186 0.2113620 0.2009519879 0.2450288 0.247195344

St5 0.00000000 0.4295467 0.3455611553 0.2219730 0.002919158

VID.TOT.FACT

"0" "Q1" "Q2" "Q3" "Q4"

St1 0.8048994 0.06642970 0.061838649 0.04005181 0.026780467

St2 0.0476824 0.19017480 0.192530649 0.27027617 0.299335981

St3 0.9388646 0.03056769 0.008733624 0.01310044 0.008733624

St4 0.3086321 0.23950824 0.181815486 0.13550521 0.134538931

St5 0.8081013 0.08512905 0.049044463 0.02898881 0.028736416

MCQ.SH.TOT.FACT

"0" "Q1" "Q2" "Q3" "Q4"

St1 1.0000000 0.0000000 0.0000000 0.0000000 0.00000000

St2 0.2515597 0.1499383 0.1294465 0.2050732 0.26398222

St3 1.0000000 0.0000000 0.0000000 0.0000000 0.00000000

St4 0.2631490 0.3012689 0.2140109 0.1464667 0.07510455

St5 1.0000000 0.0000000 0.0000000 0.0000000 0.00000000

TG.DENS.FACT

"0" "Q1" "Q2" "Q3" "Q4"

St1 0.014686633 0.5219263 0.30332469 0.14649864 0.013563708

St2 0.006003141 0.0000000 0.02774135 0.24658287 0.719672638

St3 0.532751092 0.3668122 0.07423581 0.01746725 0.008733624

St4 0.059601456 0.1460871 0.37358902 0.34961297 0.071109496

St5 0.020062135 0.2855339 0.51372272 0.17545891 0.005222380

MC.EVAL.FACT

"0" "Q1" "Q2" "Q3" "Q4"

St1 0.7864956 0.08962609 0.07428075 0.030275057 0.019322457

St2 0.4053921 0.14595249 0.12471907 0.135618337 0.188317985

St3 0.9039301 0.03493450 0.04366812 0.008733624 0.008733624

St4 0.8050488 0.09108158 0.04510610 0.037437350 0.021326130

St5 0.8699566 0.06738630 0.02628763 0.021674145 0.014695314

CONTENT.ACCESS.FACT

"0" "Q1" "Q2" "Q3" "Q4"

St1 0.3158482607 0.31801608 0.16933459 0.13287150 0.06392957

St2 0.0004601325 0.06084225 0.20131756 0.29541498 0.44196508

St3 0.6375545852 0.24454148 0.07860262 0.02183406 0.01746725

St4 0.1646772377 0.27708935 0.24730019 0.20072089 0.11021233

St5 0.4414184145 0.26695920 0.12850886 0.09950578 0.06360775