**Ergebnisse Beta Regression mit kategorisierten Werten   
(alles >55 = 75, alles <55 = 25)**

Best transition probabilities [0.65831376 0.67337249] Actual and predicted pain values [0.25 0.25 0.75] [[0.40954907 0.40954907 0.40954907]]

Best transition probabilities [0.56728565 0.8554287 ] Actual and predicted pain values [0.25 0.25 0.25] [[0.25024989 0.25024989 0.25024989]]

Best transition probabilities [0.56728565 0.8554287 ] Actual and predicted pain values [0.25 0.25 0.25] [[0.25024989 0.25024989 0.25024989]]

Best transition probabilities [0.56728565 0.8554287 ] Actual and predicted pain values [0.25 0.25 0.25] [[0.25024989 0.25024989 0.25024989]]

Best transition probabilities [0.56728565 0.8554287 ] Actual and predicted pain values [0.25 0.25 0.25] [[0.25024989 0.25024989 0.25024989]]

Best transition probabilities [0.56728565 0.8554287 ] Actual and predicted pain values [0.25 0.25 0.25] [[0.25024989 0.25024989 0.25024989]]

Best transition probabilities [0.56728565 0.8554287 ] Actual and predicted pain values [0.25 0.25 0.25] [[0.25024989 0.25024989 0.25024989]]

Best transition probabilities [0.56728565 0.8554287 ] Actual and predicted pain values [0.25 0.25 0.25] [[0.25024989 0.25024989 0.25024989]]

Best transition probabilities [0.56728565 0.8554287 ] Actual and predicted pain values [0.25 0.25 0.25] [[0.25024989 0.25024989 0.25024989]]

Best transition probabilities [0.62487506 0.87462517] Actual and predicted pain values [0.75 0.25 0.25] [[0.5 0.5 0.25024989]]

Best transition probabilities [0.56728565 0.8554287 ] Actual and predicted pain values [0.25 0.25 0.25] [[0.25024989 0.25024989 0.25024989]]

Best transition probabilities [0.56728565 0.8554287 ] Actual and predicted pain values [0.25 0.25 0.25] [[0.25024989 0.25024989 0.25024989]]

Best transition probabilities [0.12537483 0.37512494] Actual and predicted pain values [0.25 0.75 0.25] [[0.5 0.5 0.25024989]]

Best transition probabilities [0.56728565 0.8554287 ] Actual and predicted pain values [0.25 0.25 0.25] [[0.25024989 0.25024989 0.25024989]]

Best transition probabilities [0.56728565 0.8554287 ] Actual and predicted pain values [0.25 0.25 0.25] [[0.25024989 0.25024989 0.25024989]]

Best transition probabilities [0.56728565 0.8554287 ] Actual and predicted pain values [0.25 0.25 0.25] [[0.25024989 0.25024989 0.25024989]]

Best transition probabilities [0.56728565 0.8554287 ] Actual and predicted pain values [0.25 0.25 0.25] [[0.25024989 0.25024989 0.25024989]]

Best transition probabilities [0.56728565 0.8554287 ] Actual and predicted pain values [0.25 0.25 0.25] [[0.25024989 0.25024989 0.25024989]]

Best transition probabilities [0.56728565 0.8554287 ] Actual and predicted pain values [0.25 0.25 0.25] [[0.25024989 0.25024989 0.25024989]]

Best transition probabilities [0.65831376 0.67337249] Actual and predicted pain values [0.25 0.25 0.75] [[0.40954907 0.40954907 0.40954907]]

Best transition probabilities [0.12537483 0.37512494] Actual and predicted pain values [0.25 0.25 0.75] [[0.25024989 0.5 0.5 ]]

Best transition probabilities [0.12537483 0.37512494] Actual and predicted pain values [0.25 0.25 0.75] [[0.25024989 0.5 0.5 ]]

Best transition probabilities [0.67036074 0.64927852] Actual and predicted pain values [0.75 0.75 0.25] [[0.59045093 0.59045093 0.59045093]]

Best transition probabilities [0.74975011 0.25024989] Actual and predicted pain values [0.75 0.75 0.75] [[0.74975011 0.74975011 0.74975011]]

Best transition probabilities [0.74975011 0.25024989] Actual and predicted pain values [0.75 0.75 0.75] [[0.74975011 0.74975011 0.74975011]]

Best transition probabilities [0.12537483 0.37512494] Actual and predicted pain values [0.75 0.25 0.25] [[0.5 0.25024989 0.5 ]]

Best transition probabilities [0.65831376 0.67337249] Actual and predicted pain values [0.25 0.25 0.75] [[0.40954907 0.40954907 0.40954907]]

Best transition probabilities [0.79780009 0.39439982] Actual and predicted pain values [0.75 0.75 0.75] [[0.74975011 0.74975011 0.74975011]]

Best transition probabilities [0.01 0.01] Actual and predicted pain values [0.75 0.25 0.75] [[0.745 0.255 0.745]]

Best transition probabilities [0.56728565 0.8554287 ] Actual and predicted pain values [0.25 0.25 0.25] [[0.25024989 0.25024989 0.25024989]]

Best transition probabilities [0.56728565 0.8554287 ] Actual and predicted pain values [0.25 0.25 0.25] [[0.25024989 0.25024989 0.25024989]]

Best transition probabilities [0.65831376 0.67337249] Actual and predicted pain values [0.25 0.25 0.75] [[0.40954907 0.40954907 0.40954907]]

Best transition probabilities [0.79780009 0.39439982] Actual and predicted pain values [0.75 0.75 0.75] [[0.74975011 0.74975011 0.74975011]]

Best transition probabilities [0.56728565 0.8554287 ] Actual and predicted pain values [0.25 0.25 0.25] [[0.25024989 0.25024989 0.25024989]]

Best transition probabilities [0.37512494 0.12537483] Actual and predicted pain values [0.75 0.25 0.75] [[0.5 0.5 0.74975011]]

**Ergebnisse Beta Regression mit den richtigen Werten**

Best transition probabilities [0.01156343 0.38007662] Actual and predicted pain values [0.2 0.35 0.7 ] [[0.3157434 0.49825139 0.4069974 ]]

Best transition probabilities [0.58150639 0.99 ] Actual and predicted pain values [0.05 0.04 0.03] [[0.05000545 0.03857532 0.03286026]]

Best transition probabilities [0.52178928 0.94642144] Actual and predicted pain values [0.1 0.1 0.1] [[0.10039963 0.10039963 0.10039963]]

Best transition probabilities [0.04654434 0.93071242] Actual and predicted pain values [0.5 0.03 0.01] [[0.06587609 0.05791596 0.06860528]]

Best transition probabilities [0.01 0.96568309] Actual and predicted pain values [0.03 0.04 0.03] [[0.0335874 0.0335874 0.03334423]]

Best transition probabilities [0.01 0.91316243] Actual and predicted pain values [0.05 0.1 0.1 ] [[0.07915382 0.08299569 0.07915382]]

Best transition probabilities [0.0585876 0.99 ] Actual and predicted pain values [0.01 0.01 0.01] [[0.01048588 0.01048588 0.01048588]]

Best transition probabilities [0.01 0.95762569] Actual and predicted pain values [0.03 0.01 0.2 ] [[0.04205057 0.04140309 0.04205057]]

Best transition probabilities [0.50745969 0.69757655] Actual and predicted pain values [0.33 0.31 0.44] [[0.33932997 0.37008541 0.36598468]]

Best transition probabilities [0.08773783 0.973791 ] Actual and predicted pain values [0.35 0.01 0.01] [[0.03974534 0.04774409 0.02682429]]

Best transition probabilities [0.8484974 0.99 ] Actual and predicted pain values [0.73 0.53 0.38] [[0.58856321 0.6221031 0.45440362]]

Best transition probabilities [0.52208039 0.7737602 ] Actual and predicted pain values [0.3 0.3 0.33] [[0.30019995 0.31499198 0.31499198]]

Best transition probabilities [0.0585876 0.99 ] Actual and predicted pain values [0.01 0.01 0.01] [[0.01048588 0.01048588 0.01048588]]

Best transition probabilities [0.60798417 0.49101356] Actual and predicted pain values [0.45 0.7 0.5 ] [[0.52878599 0.55353542 0.57828485]]

Best transition probabilities [0.20658187 0.87536667] Actual and predicted pain values [0.13 0.13 0.14] [[0.13036973 0.13528664 0.13528664]]

Best transition probabilities [0.01 0.92745567] Actual and predicted pain values [0.03 0.16 0.06] [[0.070668 0.070668 0.06253724]]

Best transition probabilities [0.16360191 0.49660204] Actual and predicted pain values [0.5 0.5 0.2] [[0.5 0.33349994 0.33349994]]

Best transition probabilities [0.01 0.9595971] Actual and predicted pain values [0.04 0.01 0.13] [[0.03827469 0.03918678 0.04009887]]

Best transition probabilities [0.09815817 0.56487699] Actual and predicted pain values [0.2 0.39 0.42] [[0.31381567 0.36773004 0.30370672]]

Best transition probabilities [0.93635981 0.6796424 ] Actual and predicted pain values [0.32 0.31 0.72] [[0.32651762 0.5174783 0.51131828]]

Best transition probabilities [0.01 0.23236441] Actual and predicted pain values [0.38 0.3 0.69] [[0.36608873 0.47973406 0.54034491]]

Best transition probabilities [0.43539128 0.16419485] Actual and predicted pain values [0.48 0.45 0.8 ] [[0.46742439 0.6436065 0.65561891]]

Best transition probabilities [0.75517961 0.01 ] Actual and predicted pain values [0.83 0.93 0.46] [[0.78335806 0.79509908 0.77161704]]

Best transition probabilities [0.90051586 0.16622644] Actual and predicted pain values [0.82 0.74 0.96] [[0.83644325 0.88850225 0.88316286]]

Best transition probabilities [0.81360019 0.36324173] Actual and predicted pain values [0.73 0.77 0.77] [[0.73048448 0.76585287 0.77292655]]

Best transition probabilities [0.25116588 0.75578811] Actual and predicted pain values [0.56 0.24 0.08] [[0.24595039 0.24810613 0.24588085]]

Best transition probabilities [0.99 0.85415399] Actual and predicted pain values [0.01 0.43 0.93] [[0.15428755 0.15428755 0.50883223]]

Best transition probabilities [0.99 0.41734662] Actual and predicted pain values [0.91 0.93 0.99] [[0.94111841 0.9533388 0.96148574]]

Best transition probabilities [0.50607121 0.01 ] Actual and predicted pain values [0.75 0.48 0.92] [[0.83998208 0.62705341 0.75771418]]

Best transition probabilities [0.01 0.86540198] Actual and predicted pain values [0.31 0.17 0.02] [[0.13086008 0.09597264 0.11341636]]

Best transition probabilities [0.01 0.92096053] Actual and predicted pain values [0.13 0.19 0.01] [[0.0762779 0.07006434 0.06592197]]

Best transition probabilities [0.01 0.13777511] Actual and predicted pain values [0.44 0.29 0.92] [[0.70882441 0.48724594 0.61507967]]

Best transition probabilities [0.98951893 0.01096213] Actual and predicted pain values [0.99 0.99 0.99] [[0.98951412 0.98951412 0.98951412]]

Best transition probabilities [0.01 0.85714082] Actual and predicted pain values [0.43 0.01 0.12] [[0.12691608 0.08572973 0.14153059]]

Best transition probabilities [0.52751414 0.01 ] Actual and predicted pain values [0.54 0.36 0.98] [[0.532139 0.74025764 0.82350509]]

**Ergebnisse Beta Regression mit 3 Kategorien   
(x<25 = 20, 25<x<55 = 50, x>55=70)**

Best transition probabilities [0.3215926 0.45539815] Actual and predicted pain values [0.2 0.5 0.7] [[0.43309723 0.5 0.43309723]]

Best transition probabilities [0.55127769 0.88744462] Actual and predicted pain values [0.2 0.2 0.2] [[0.20029984 0.20029984 0.20029984]]

Best transition probabilities [0.55127769 0.88744462] Actual and predicted pain values [0.2 0.2 0.2] [[0.20029984 0.20029984 0.20029984]]

Best transition probabilities [0.01 0.59061807] Actual and predicted pain values [0.5 0.2 0.2] [[0.32950554 0.20969096 0.32950554]]

Best transition probabilities [0.55127769 0.88744462] Actual and predicted pain values [0.2 0.2 0.2] [[0.20029984 0.20029984 0.20029984]]

Best transition probabilities [0.55127769 0.88744462] Actual and predicted pain values [0.2 0.2 0.2] [[0.20029984 0.20029984 0.20029984]]

Best transition probabilities [0.55127769 0.88744462] Actual and predicted pain values [0.2 0.2 0.2] [[0.20029984 0.20029984 0.20029984]]

Best transition probabilities [0.55127769 0.88744462] Actual and predicted pain values [0.2 0.2 0.2] [[0.20029984 0.20029984 0.20029984]]

Best transition probabilities [0.5 0.5] Actual and predicted pain values [0.5 0.5 0.5] [[0.5 0.5 0.5]]

Best transition probabilities [0.01 0.59061807] Actual and predicted pain values [0.5 0.2 0.2] [[0.32950554 0.20969096 0.32950554]]

Best transition probabilities [0.76062939 0.76062939] Actual and predicted pain values [0.7 0.5 0.5] [[0.60425176 0.60425176 0.5 ]]

Best transition probabilities [0.66333333 0.66333333] Actual and predicted pain values [0.5 0.5 0.5] [[0.5 0.5 0.5]]

Best transition probabilities [0.55127769 0.88744462] Actual and predicted pain values [0.2 0.2 0.2] [[0.20029984 0.20029984 0.20029984]]

Best transition probabilities [0.59916723 0.45545233] Actual and predicted pain values [0.5 0.7 0.5] [[0.55547158 0.57185745 0.58278136]]

Best transition probabilities [0.55127769 0.88744462] Actual and predicted pain values [0.2 0.2 0.2] [[0.20029984 0.20029984 0.20029984]]

Best transition probabilities [0.55127769 0.88744462] Actual and predicted pain values [0.2 0.2 0.2] [[0.20029984 0.20029984 0.20029984]]

Best transition probabilities [0.05599983 0.38899996] Actual and predicted pain values [0.5 0.5 0.2] [[0.5 0.33349994 0.33349994]]

Best transition probabilities [0.55127769 0.88744462] Actual and predicted pain values [0.2 0.2 0.2] [[0.20029984 0.20029984 0.20029984]]

Best transition probabilities [0.05599983 0.38899996] Actual and predicted pain values [0.2 0.5 0.5] [[0.33349994 0.5 0.33349994]]

Best transition probabilities [0.77800468 0.56950117] Actual and predicted pain values [0.5 0.5 0.7] [[0.5 0.60425175 0.60425175]]

Best transition probabilities [0.71004826 0.56990348] Actual and predicted pain values [0.5 0.5 0.7] [[0.57007239 0.57007239 0.57007239]]

Best transition probabilities [0.34362237 0.13511885] Actual and predicted pain values [0.5 0.5 0.7] [[0.5 0.60425176 0.60425176]]

Best transition probabilities [0.71879999 0.55240002] Actual and predicted pain values [0.7 0.7 0.5] [[0.63743999 0.63743999 0.63743999]]

Best transition probabilities [0.69980008 0.30019992] Actual and predicted pain values [0.7 0.7 0.7] [[0.69980008 0.69980008 0.69980008]]

Best transition probabilities [0.69980008 0.30019992] Actual and predicted pain values [0.7 0.7 0.7] [[0.69980008 0.69980008 0.69980008]]

Best transition probabilities [0.55550009 0.88850022] Actual and predicted pain values [0.5 0.2 0.2] [[0.33349994 0.33349994 0.20029984]]

Best transition probabilities [0.99 0.79126942] Actual and predicted pain values [0.2 0.5 0.7] [[0.36498447 0.36498447 0.59936529]]

Best transition probabilities [0.76676929 0.45646142] Actual and predicted pain values [0.7 0.7 0.7] [[0.69980008 0.69980008 0.69980008]]

Best transition probabilities [0.35479253 0.01 ] Actual and predicted pain values [0.7 0.5 0.7] [[0.67239626 0.54535477 0.67239626]]

Best transition probabilities [0.01 0.59061807] Actual and predicted pain values [0.5 0.2 0.2] [[0.32950554 0.20969096 0.32950554]]

Best transition probabilities [0.55127769 0.88744462] Actual and predicted pain values [0.2 0.2 0.2] [[0.20029984 0.20029984 0.20029984]]

Best transition probabilities [0.77800468 0.56950117] Actual and predicted pain values [0.5 0.5 0.7] [[0.5 0.60425175 0.60425175]]

Best transition probabilities [0.76676929 0.45646142] Actual and predicted pain values [0.7 0.7 0.7] [[0.69980008 0.69980008 0.69980008]]

Best transition probabilities [0.01 0.59061807] Actual and predicted pain values [0.5 0.2 0.2] [[0.32950554 0.20969096 0.32950554]]

Best transition probabilities [0.34362237 0.13511885] Actual and predicted pain values [0.5 0.5 0.7] [[0.5 0.60425176 0.60425176]]