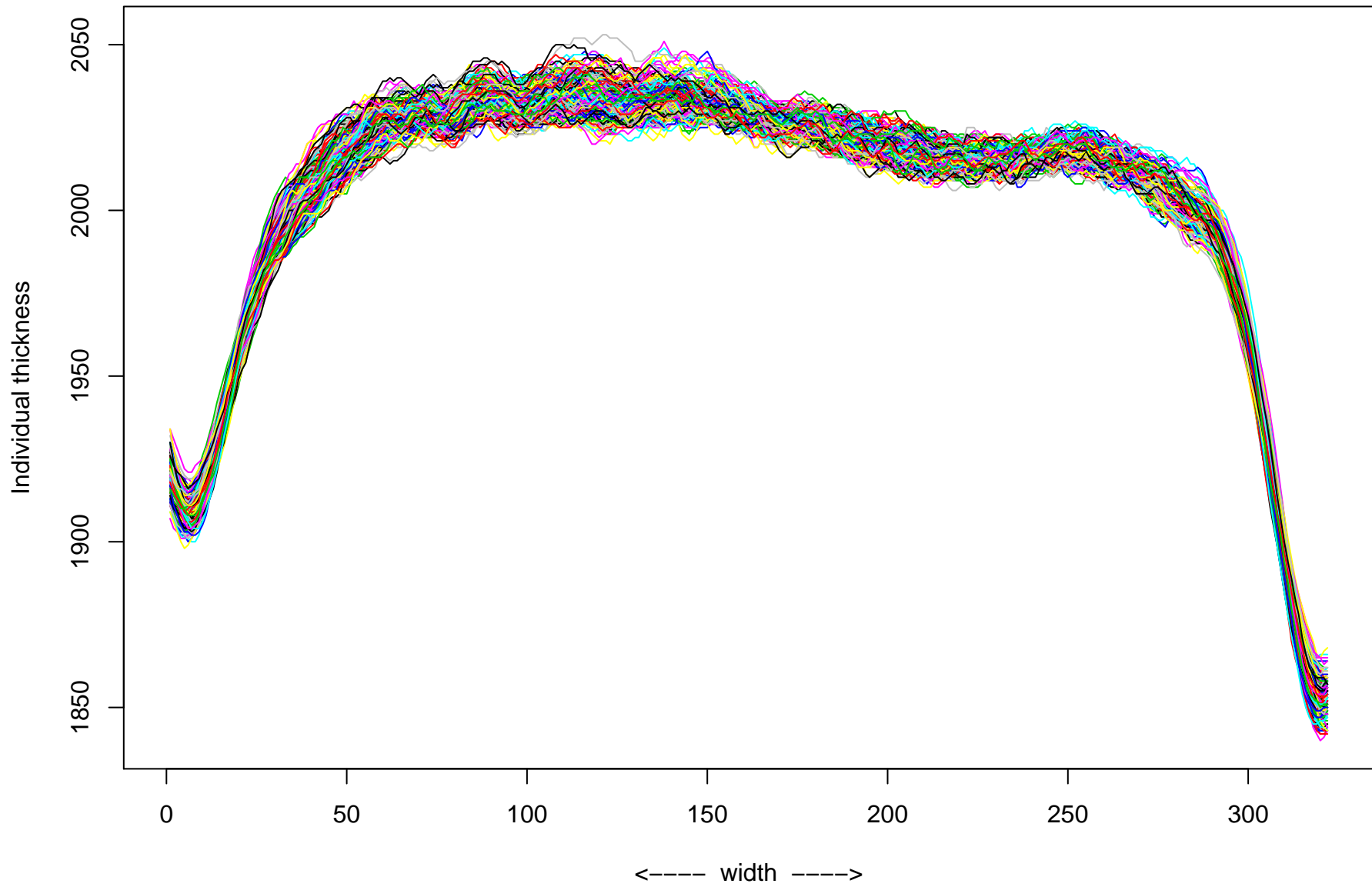
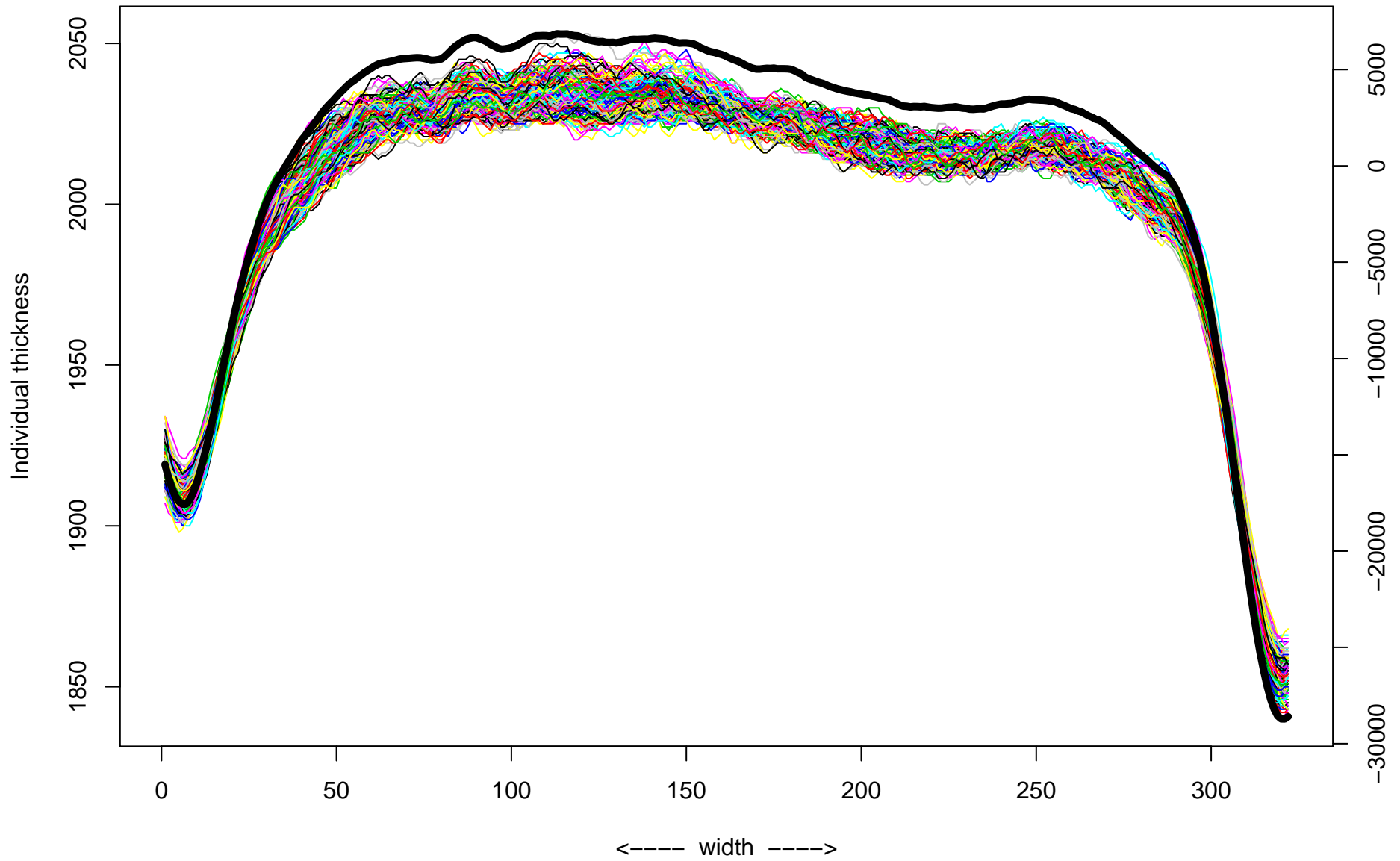


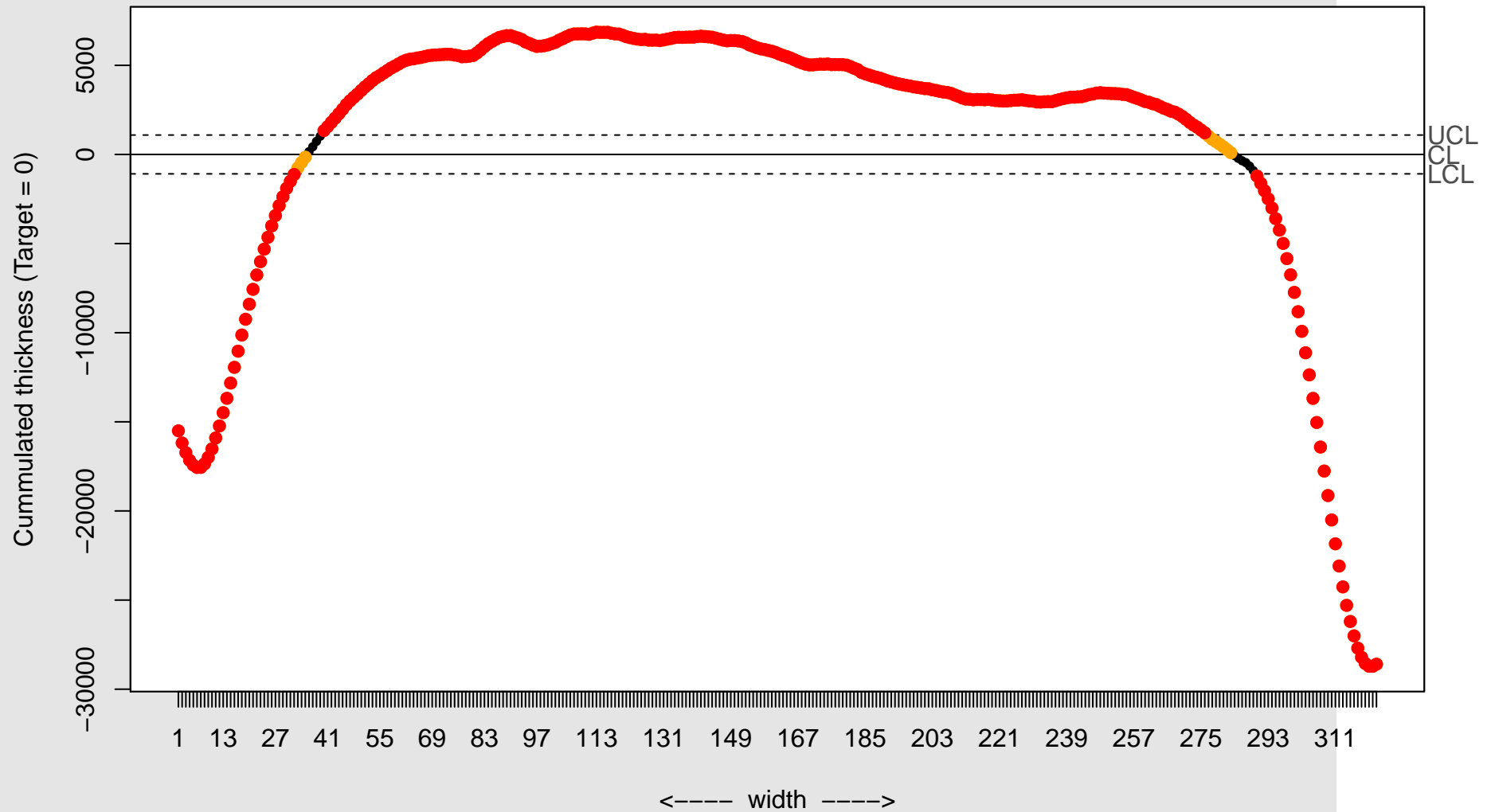
# Individual thickness only



# Simulated thickness



## Simulated thickness



Number of groups = 322

Center = 0

StdDev = 181.4946

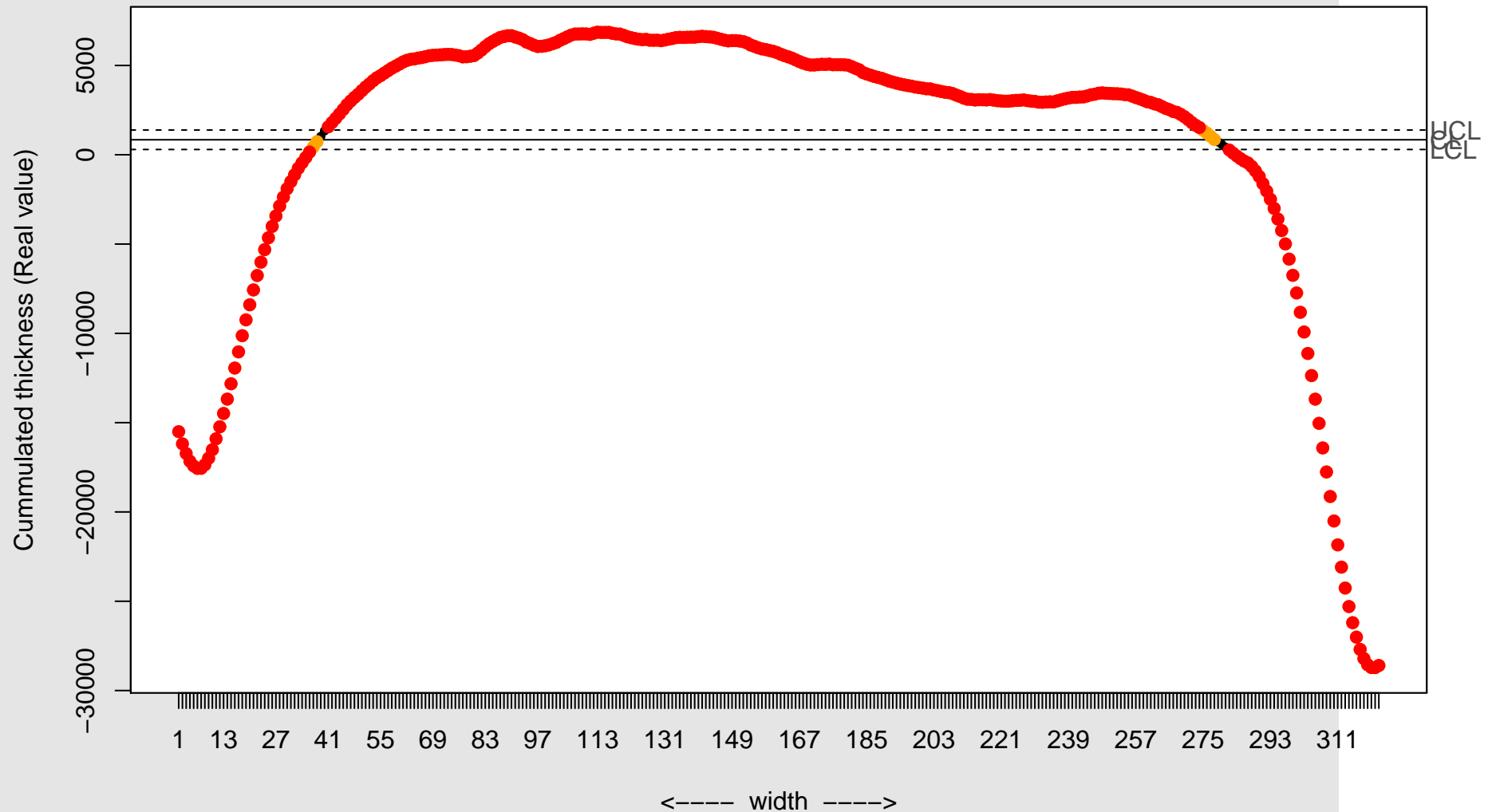
LCL = -1088.967

UCL = 1088.967

Number beyond limits = 302

Number violating runs = 304

Simulated thickness: Cpk is  $-0.03307$  and  $z$  is  $-1.599$ .



Number of groups = 322

Center = 839.4565

StdDev = 181.4946

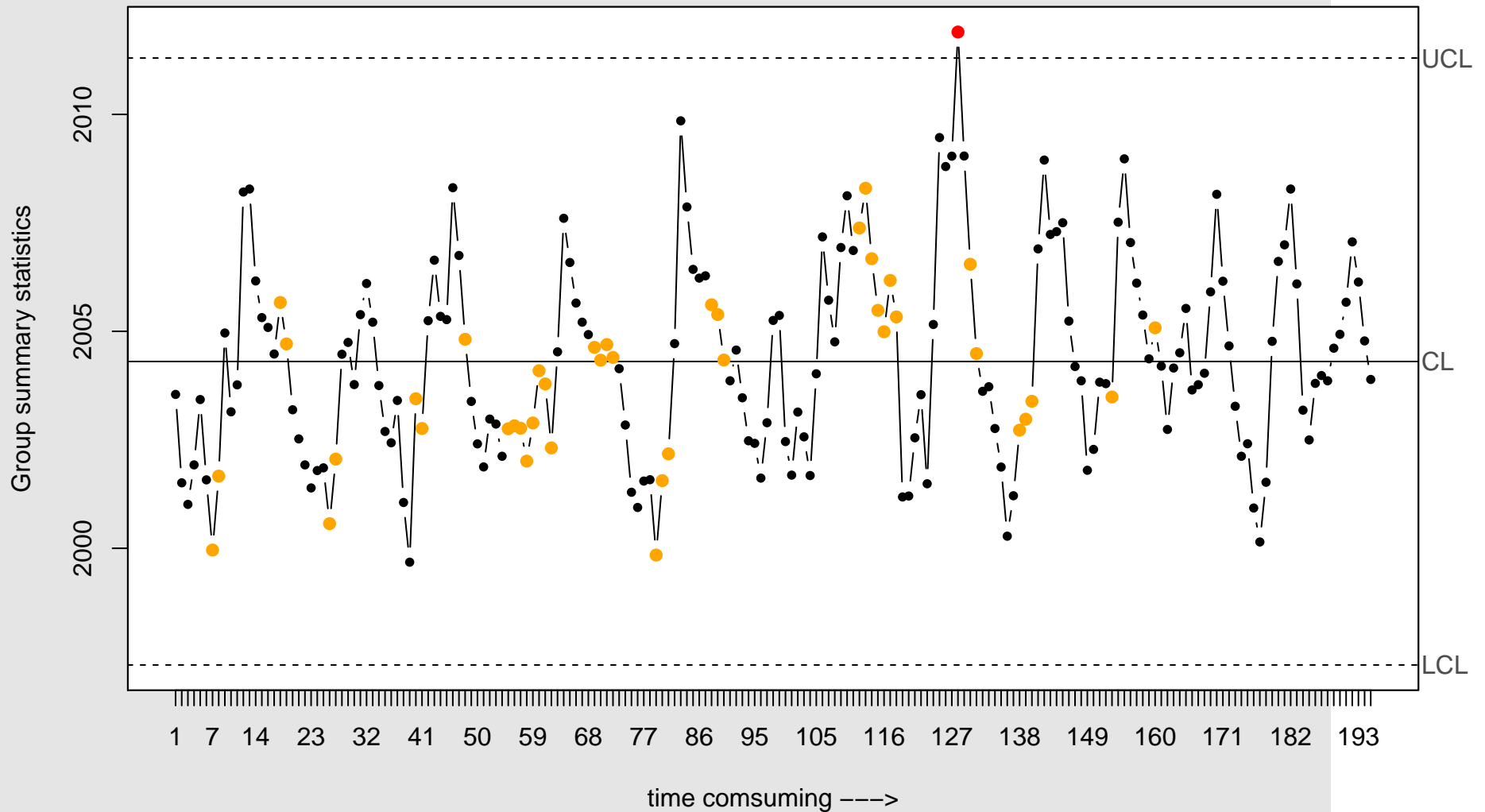
LCL = 294.9729

UCL = 1383.94

Number beyond limits = 311

Number violating runs = 304

X-bar chart for a given dataset

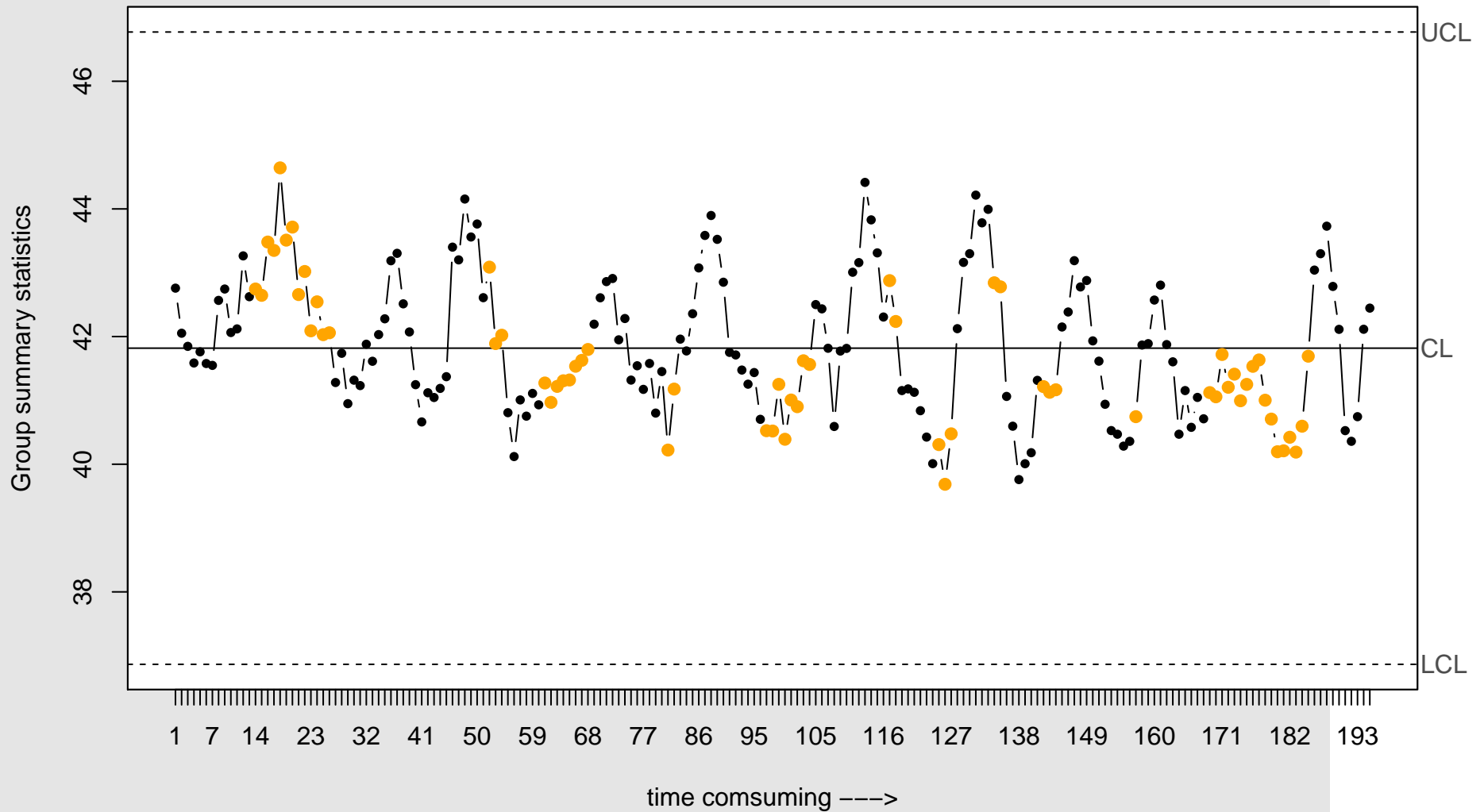


Number of groups = 195  
Center = 2004.305  
StdDev = 41.83195

LCL = 1997.311  
UCL = 2011.299

Number beyond limits = 1  
Number violating runs = 41

S chart for a given dataset

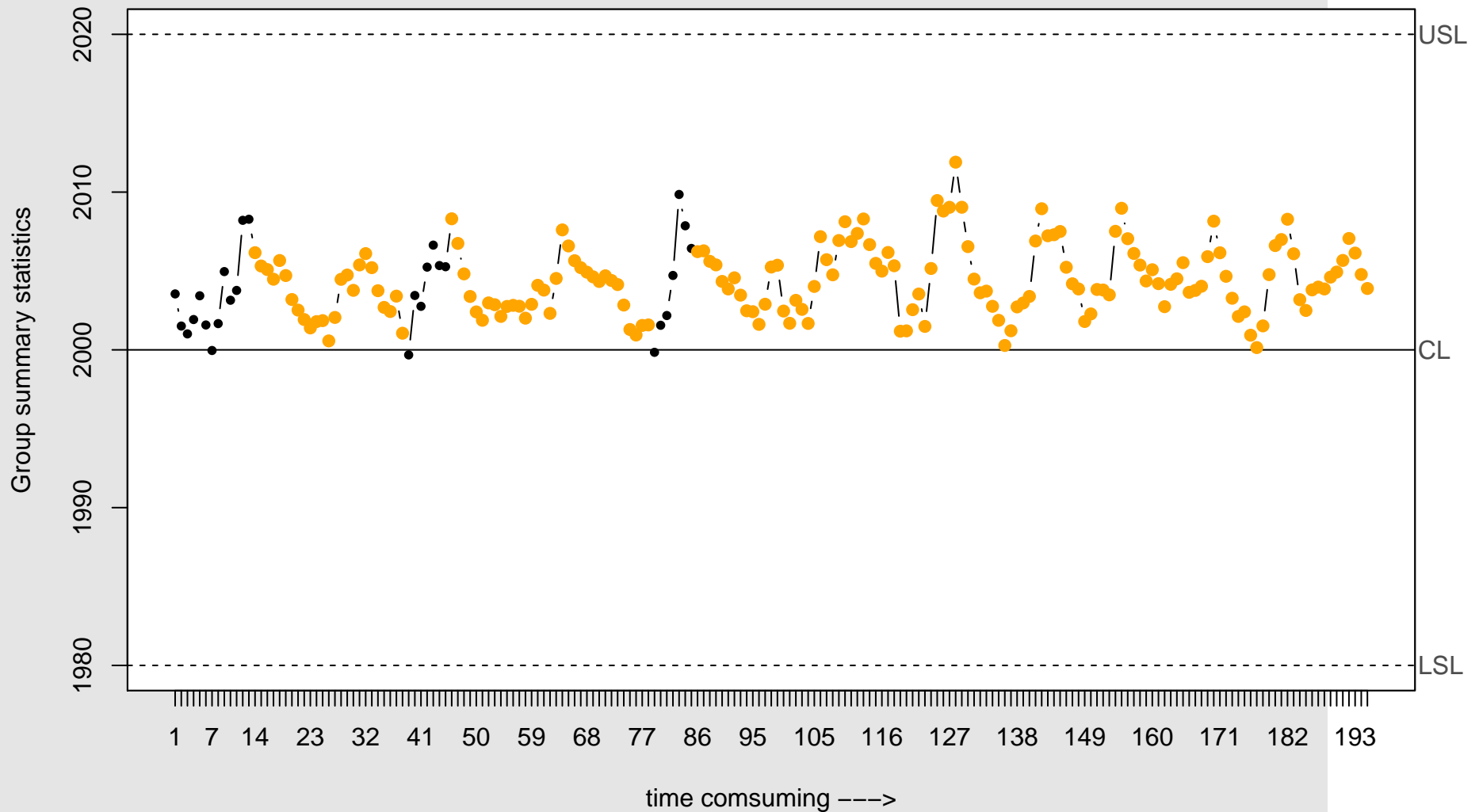


Number of groups = 195  
Center = 41.81832  
StdDev = 41.8509

LCL = 36.86508  
UCL = 46.77155

Number beyond limits = 0  
Number violating runs = 62

X-bar chart using USL/LSL for a given dataset



Number of groups = 195

Center = 2000

StdDev = 41.83195

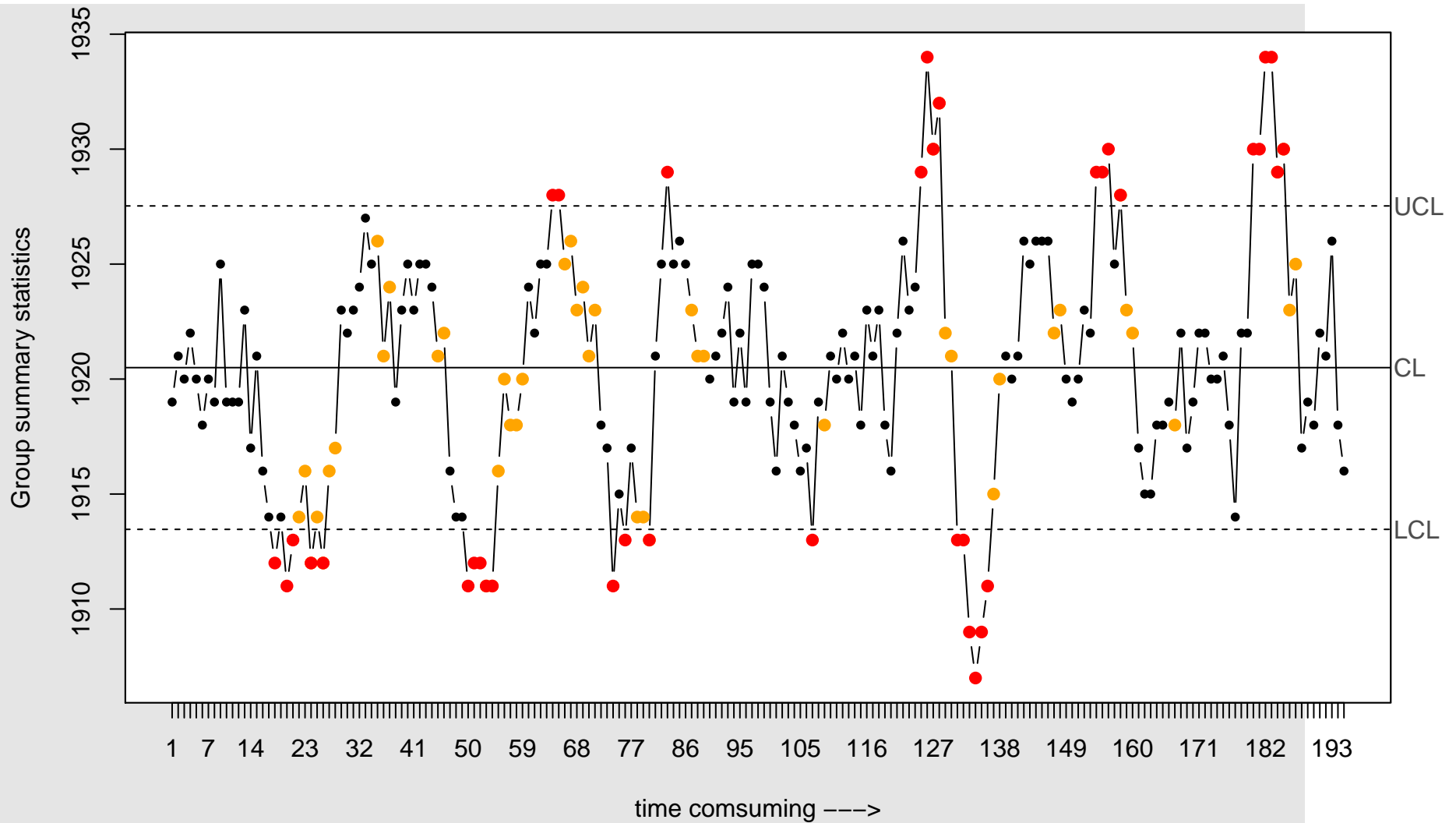
LCL = 1980

UCL = 2020

Number beyond limits = 0

Number violating runs = 168

# 1th column point of this product



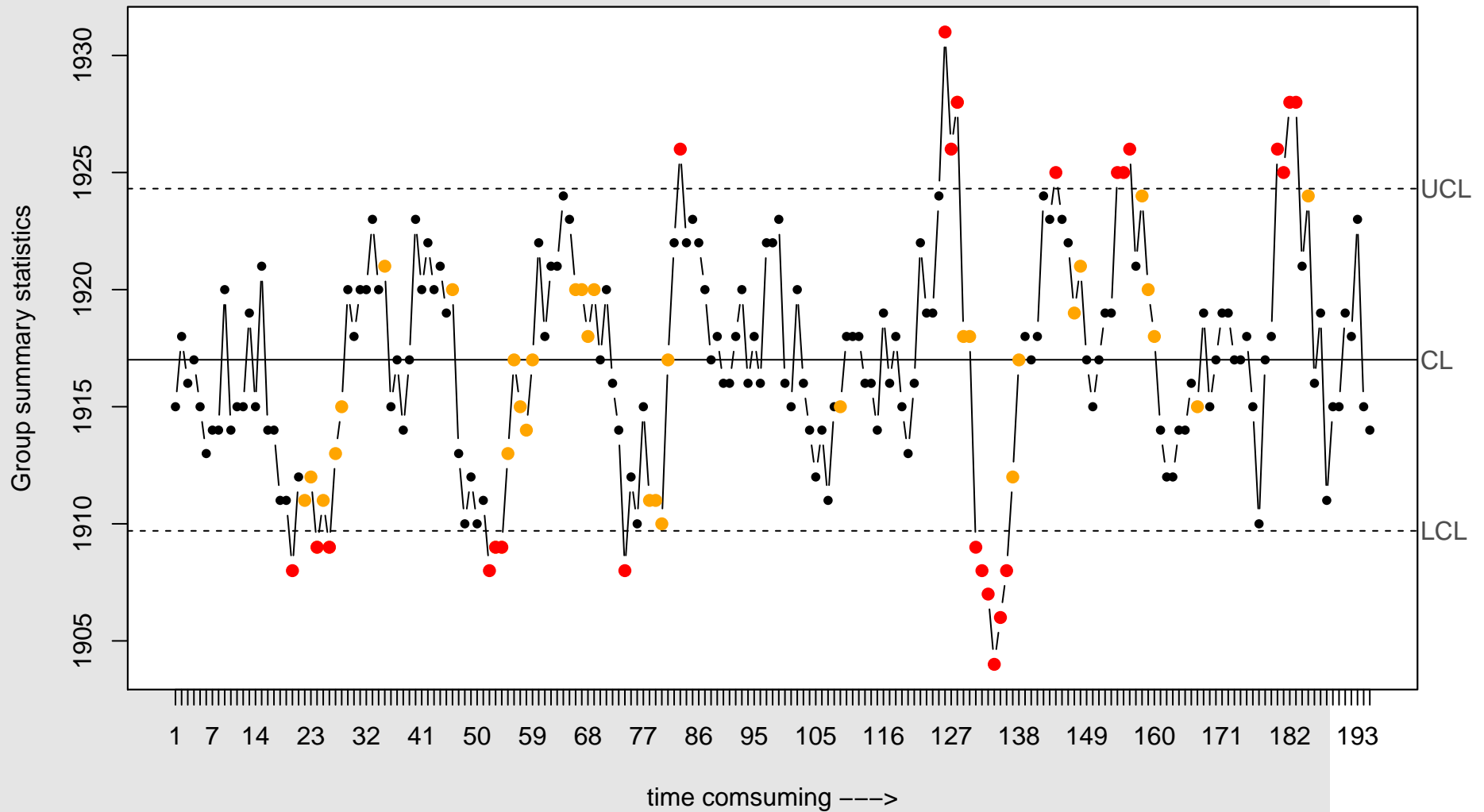
Number of groups = 195  
Center = 1920.497  
StdDev = 2.344264

LCL = 1913.465  
UCL = 1927.53

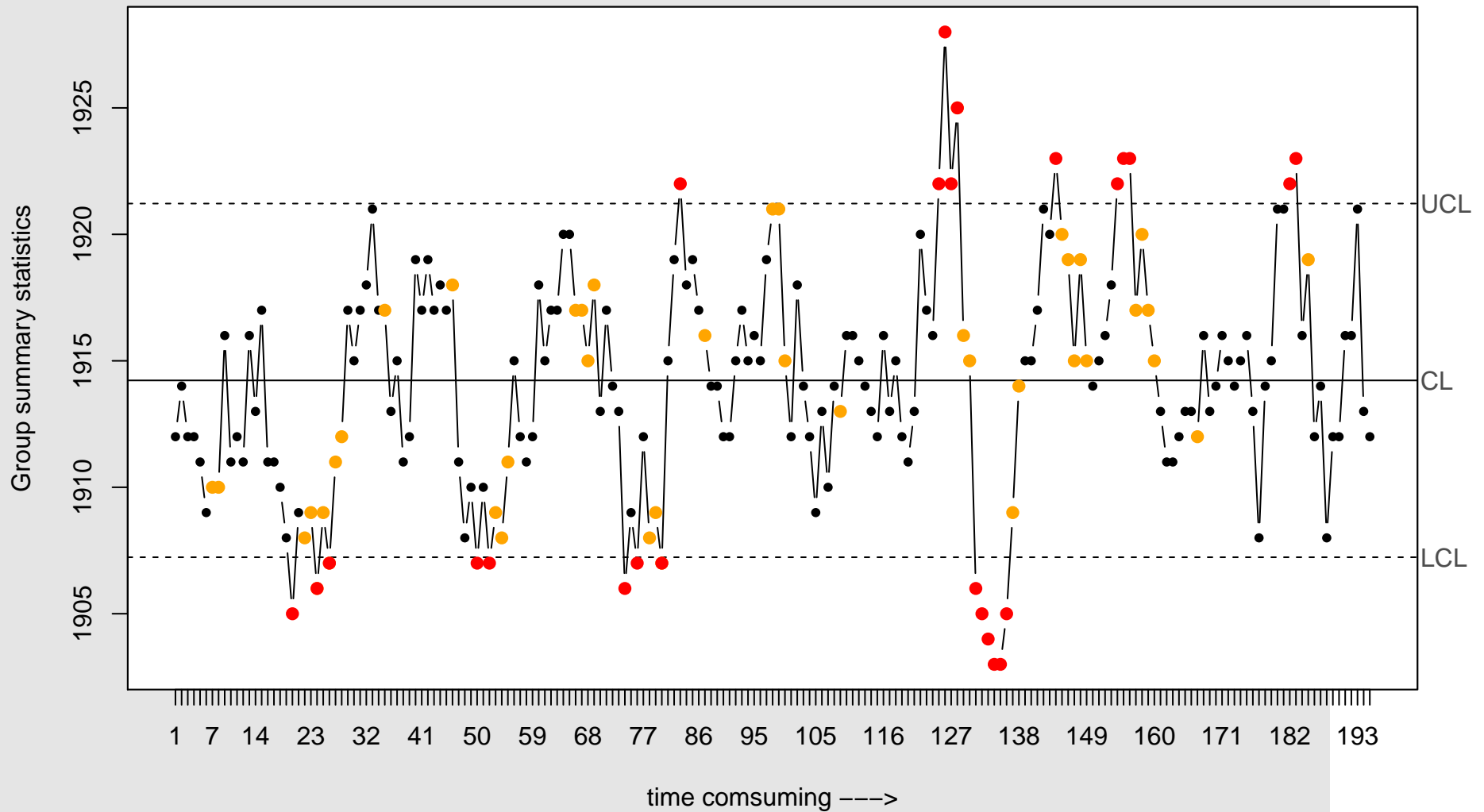
Number beyond limits = 37  
Number violating runs = 48



## 2th column point of this product



### 3th column point of this product



Number of groups = 195

Center = 1914.226

StdDev = 2.330555

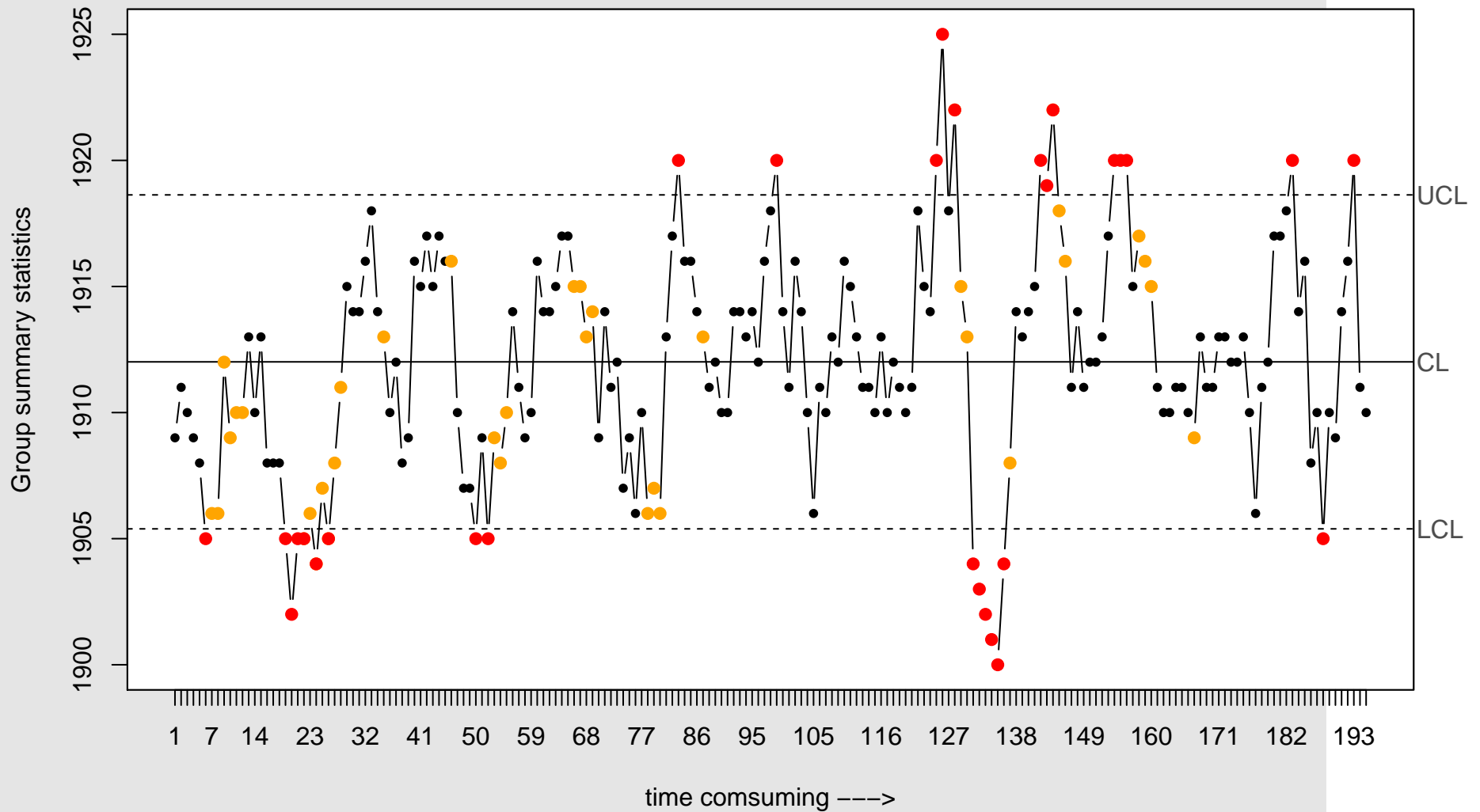
LCL = 1907.234

UCL = 1921.217

Number beyond limits = 25

Number violating runs = 42

# 4th column point of this product



Number of groups = 195

Center = 1912.01

StdDev = 2.207173

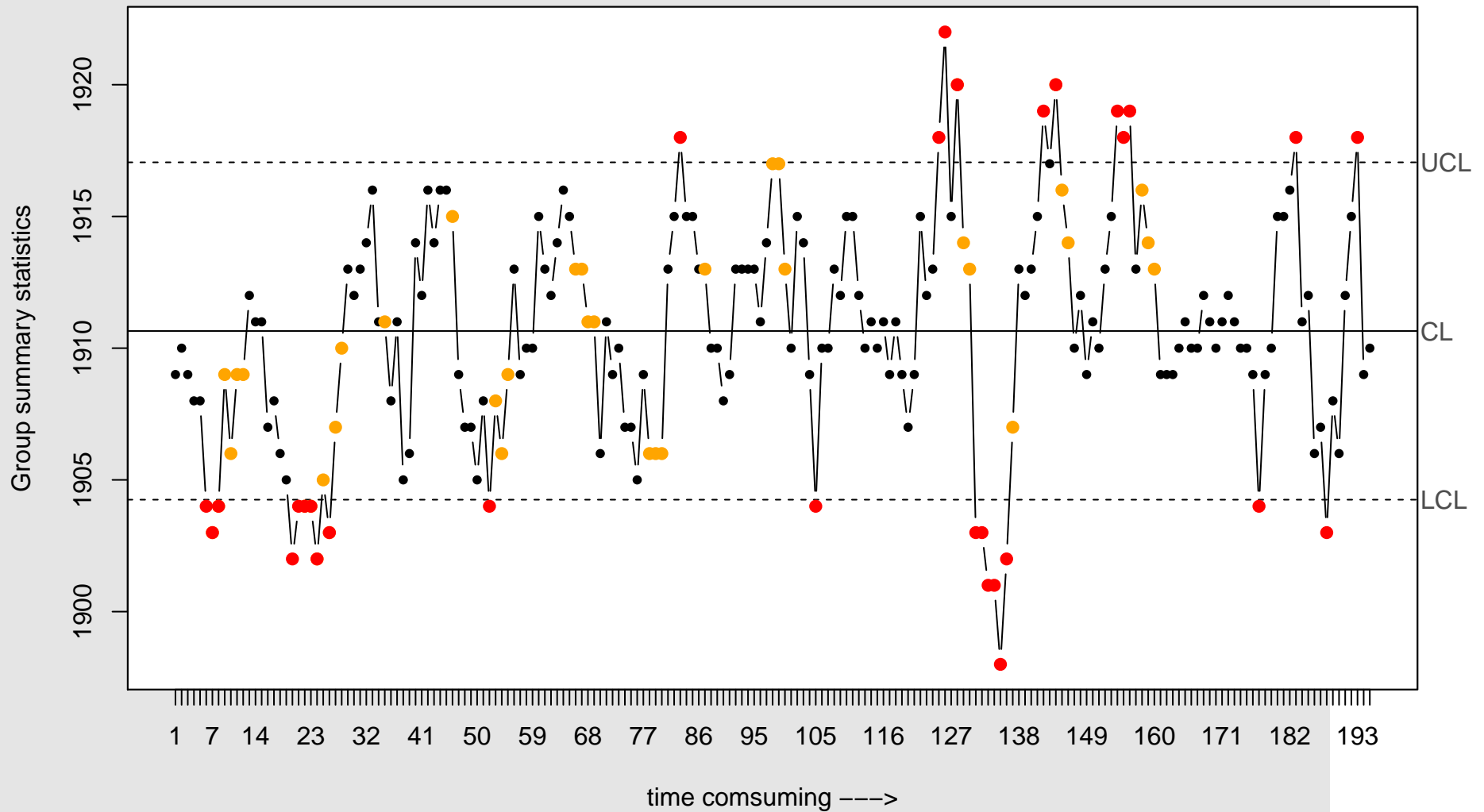
LCL = 1905.389

UCL = 1918.632

Number beyond limits = 29

Number violating runs = 37

# 5th column point of this product



Number of groups = 195

Center = 1910.651

StdDev = 2.134057

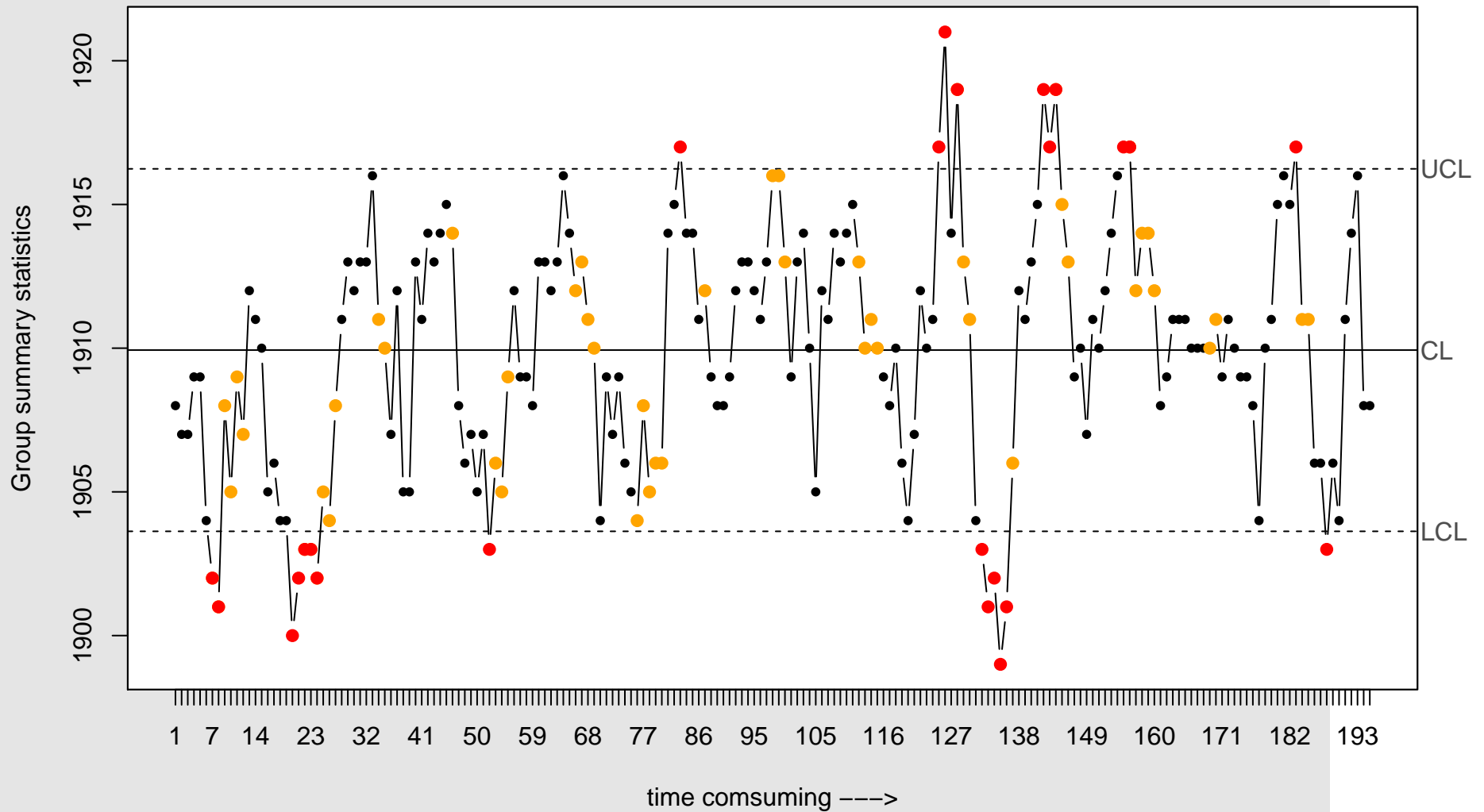
LCL = 1904.249

UCL = 1917.053

Number beyond limits = 30

Number violating runs = 39

# 6th column point of this product



Number of groups = 195

Center = 1909.933

StdDev = 2.102069

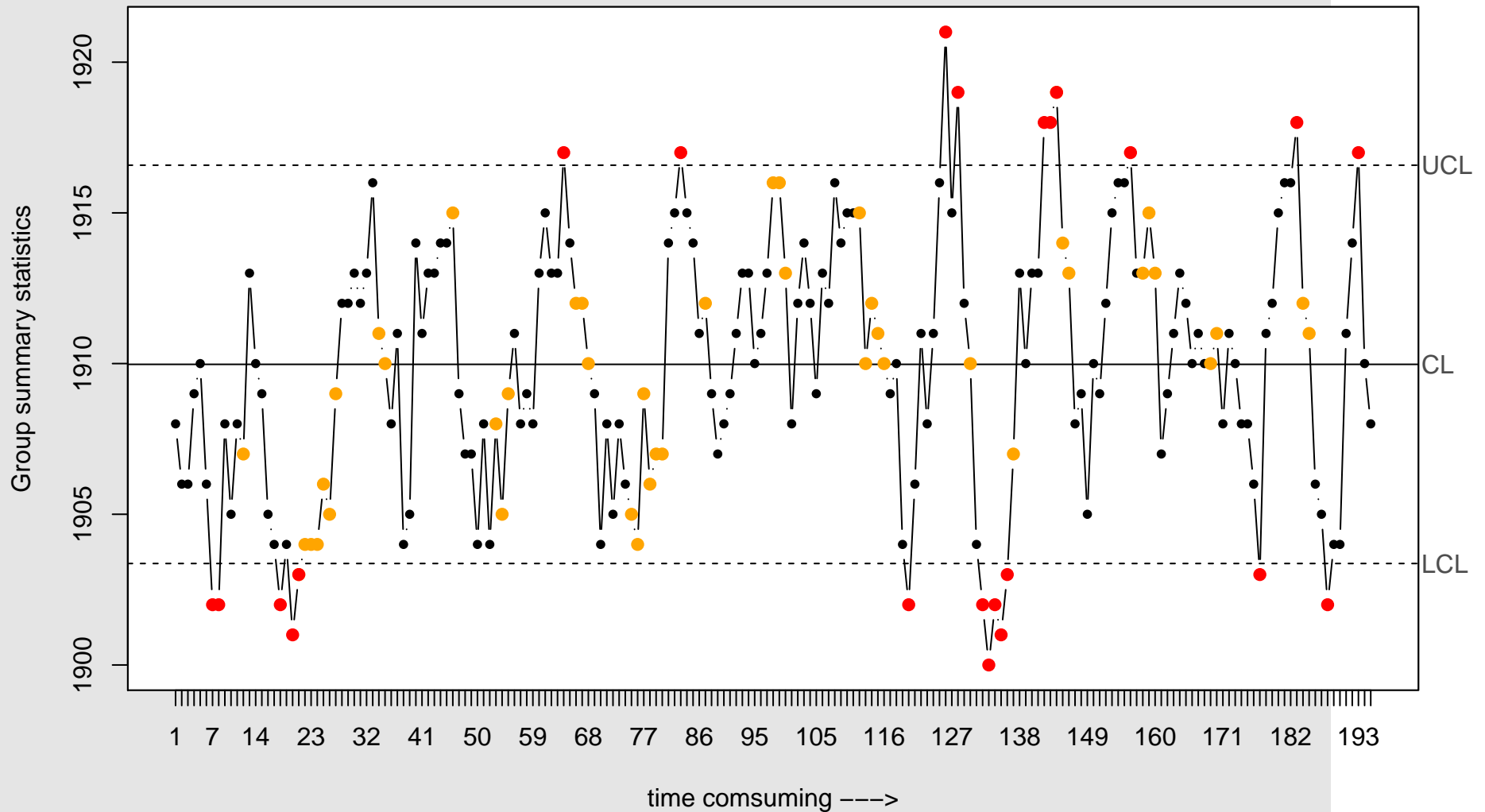
LCL = 1903.627

UCL = 1916.24

Number beyond limits = 24

Number violating runs = 51

# 7th column point of this product

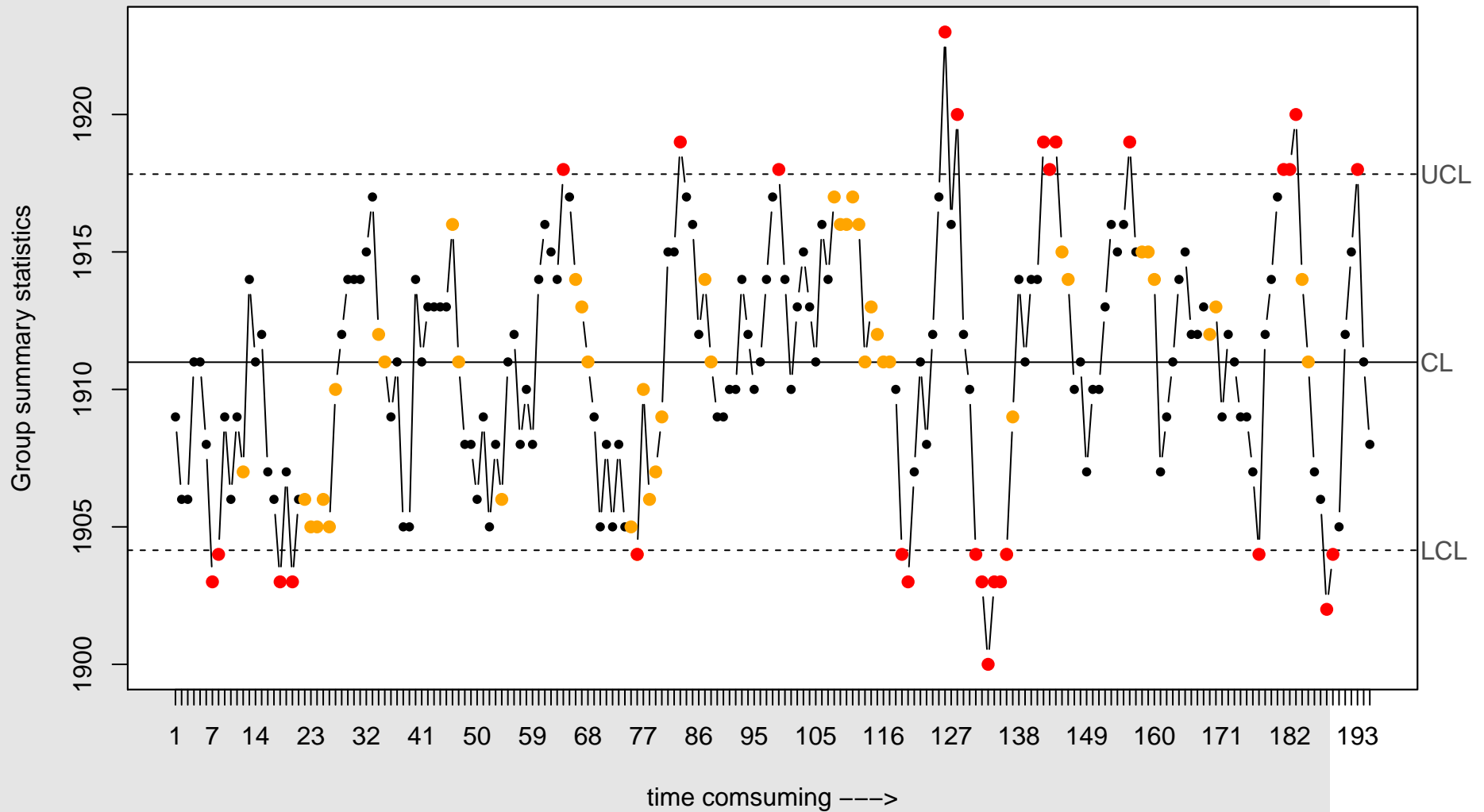


Number of groups = 195  
Center = 1909.974  
StdDev = 2.202603

LCL = 1903.367  
UCL = 1916.582

Number beyond limits = 23  
Number violating runs = 44

# 8th column point of this product



Number of groups = 195

Center = 1910.99

StdDev = 2.280288

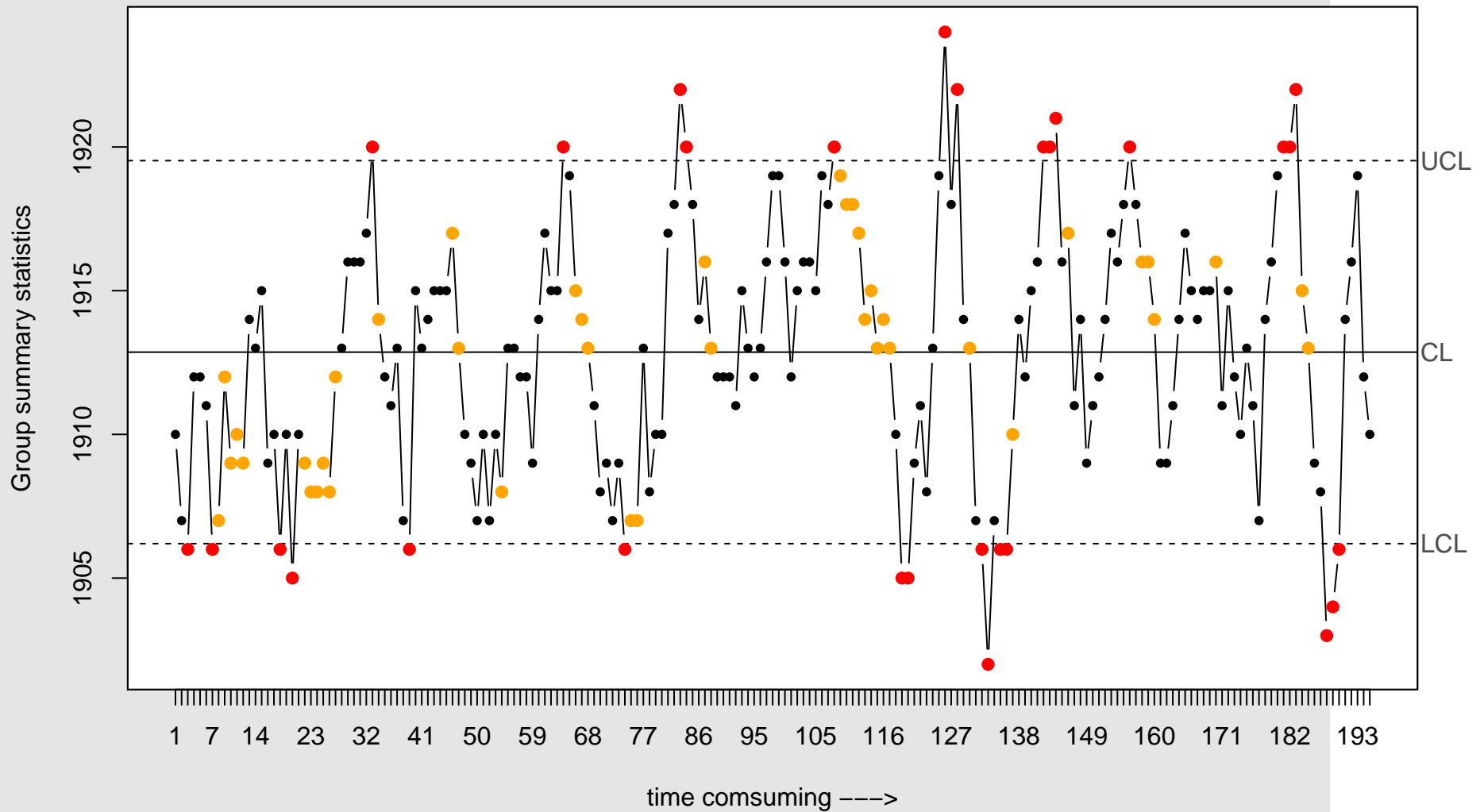
LCL = 1904.149

UCL = 1917.831

Number beyond limits = 29

Number violating runs = 45

# 9th column point of this product



Number of groups = 195

Center = 1912.862

StdDev = 2.220882

LCL = 1906.199

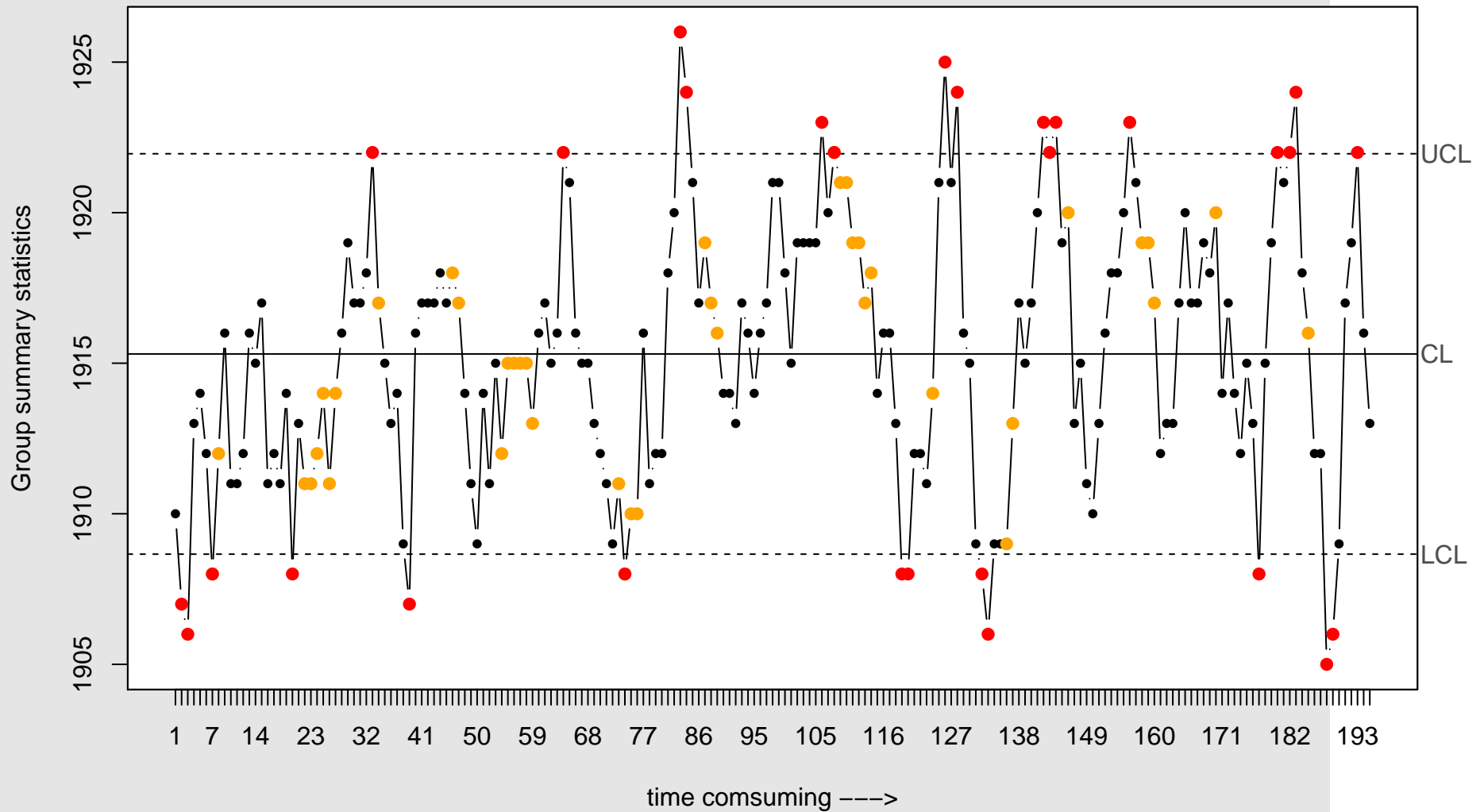
UCL = 1919.524

Number beyond limits = 29

Number violating runs = 42



# 10th column point of this product



Number of groups = 195

Center = 1915.308

StdDev = 2.216312

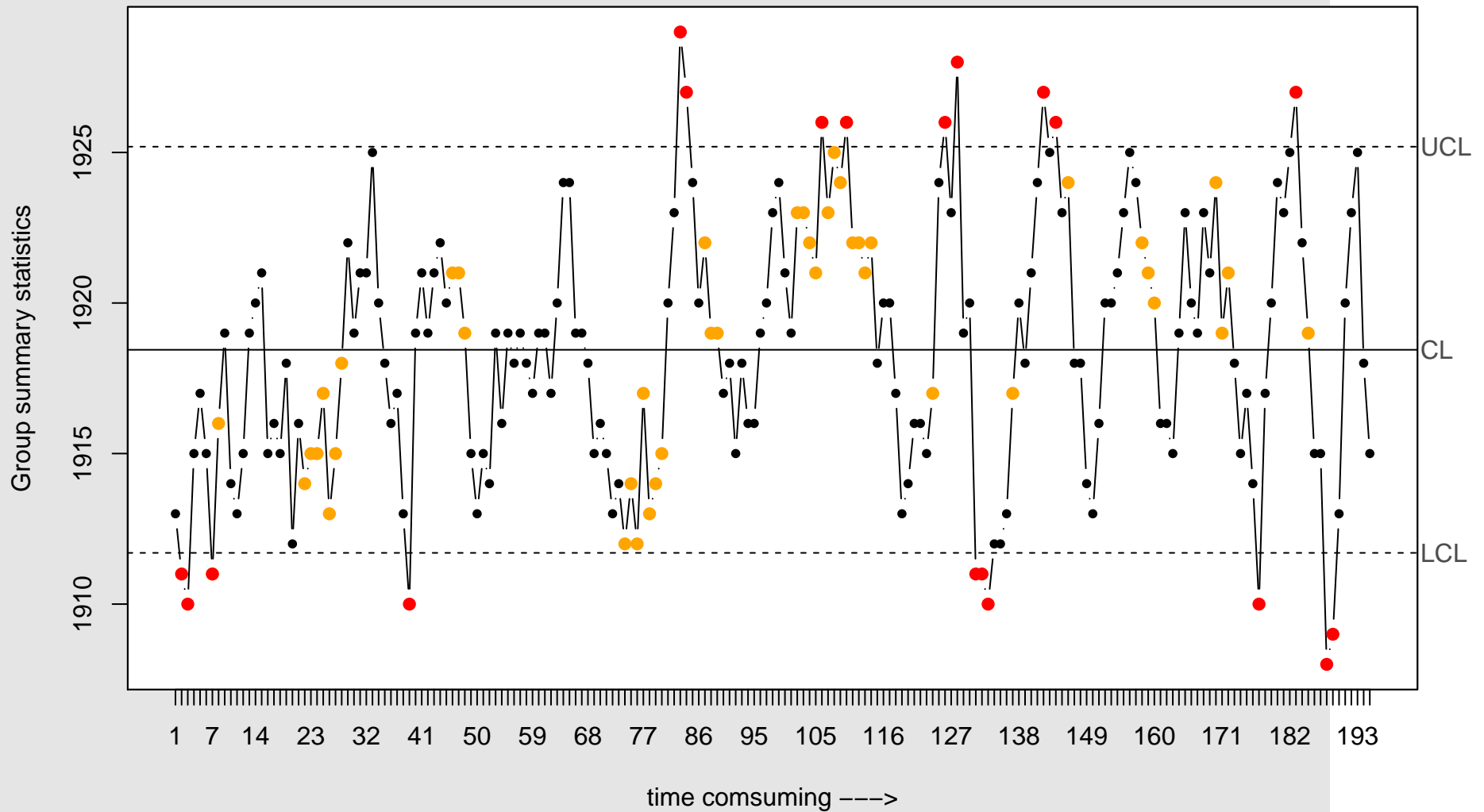
LCL = 1908.659

UCL = 1921.957

Number beyond limits = 29

Number violating runs = 40

# 11th column point of this product



Number of groups = 195

Center = 1918.446

StdDev = 2.2483

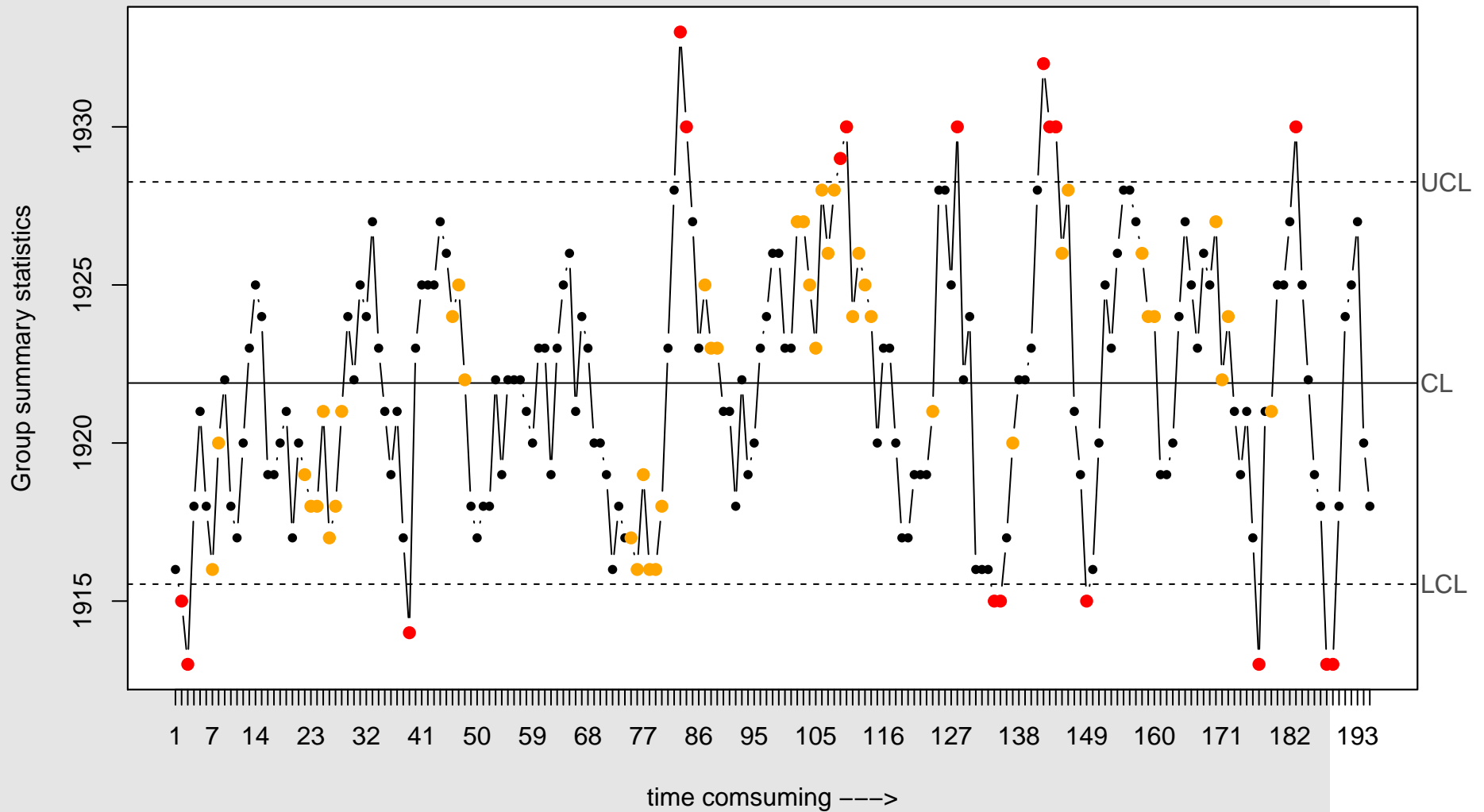
LCL = 1911.701

UCL = 1925.191

Number beyond limits = 19

Number violating runs = 45

# 12th column point of this product



Number of groups = 195

Center = 1921.897

StdDev = 2.120348

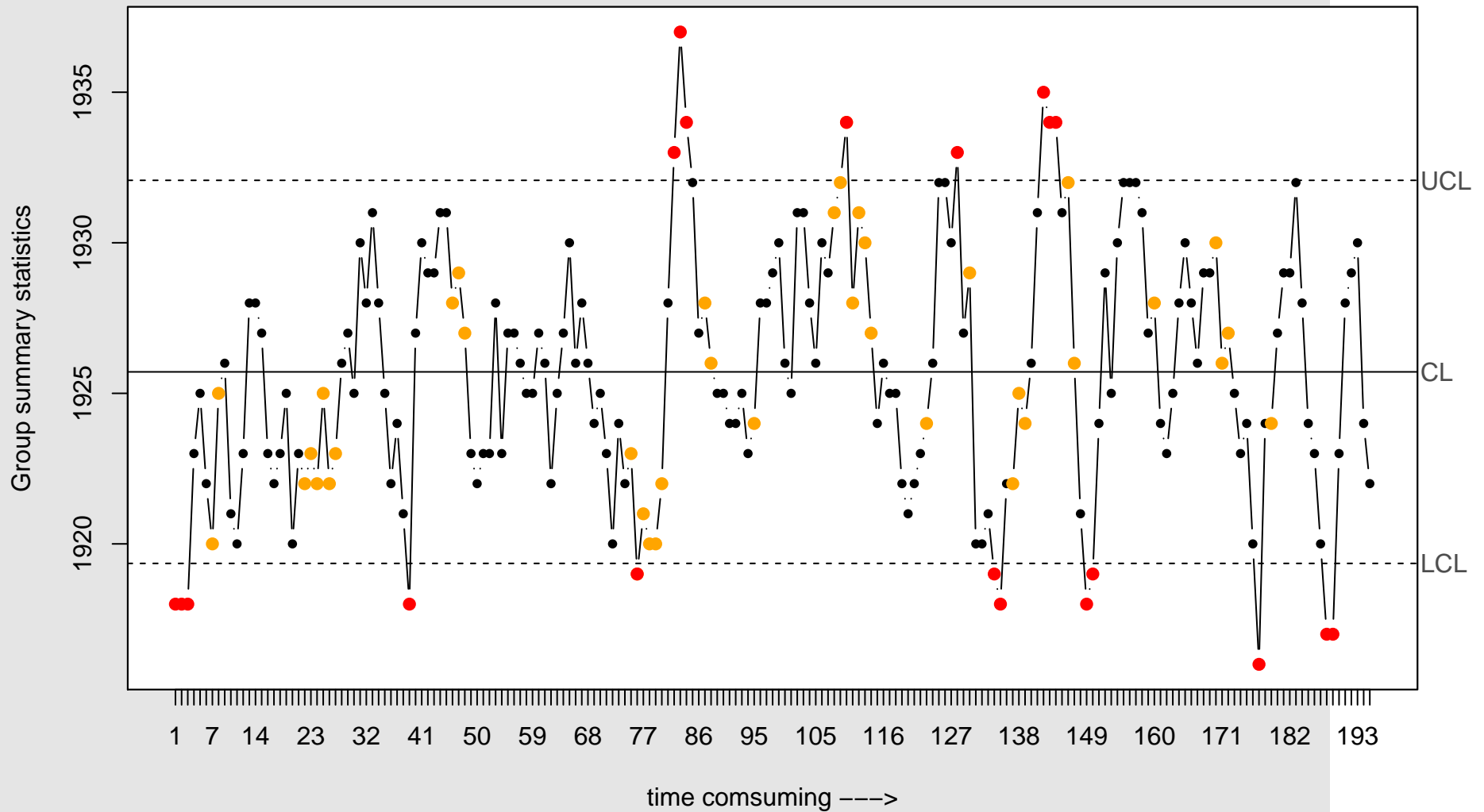
LCL = 1915.536

UCL = 1928.258

Number beyond limits = 18

Number violating runs = 46

### 13th column point of this product



Number of groups = 195

Center = 1925.713

StdDev = 2.120348

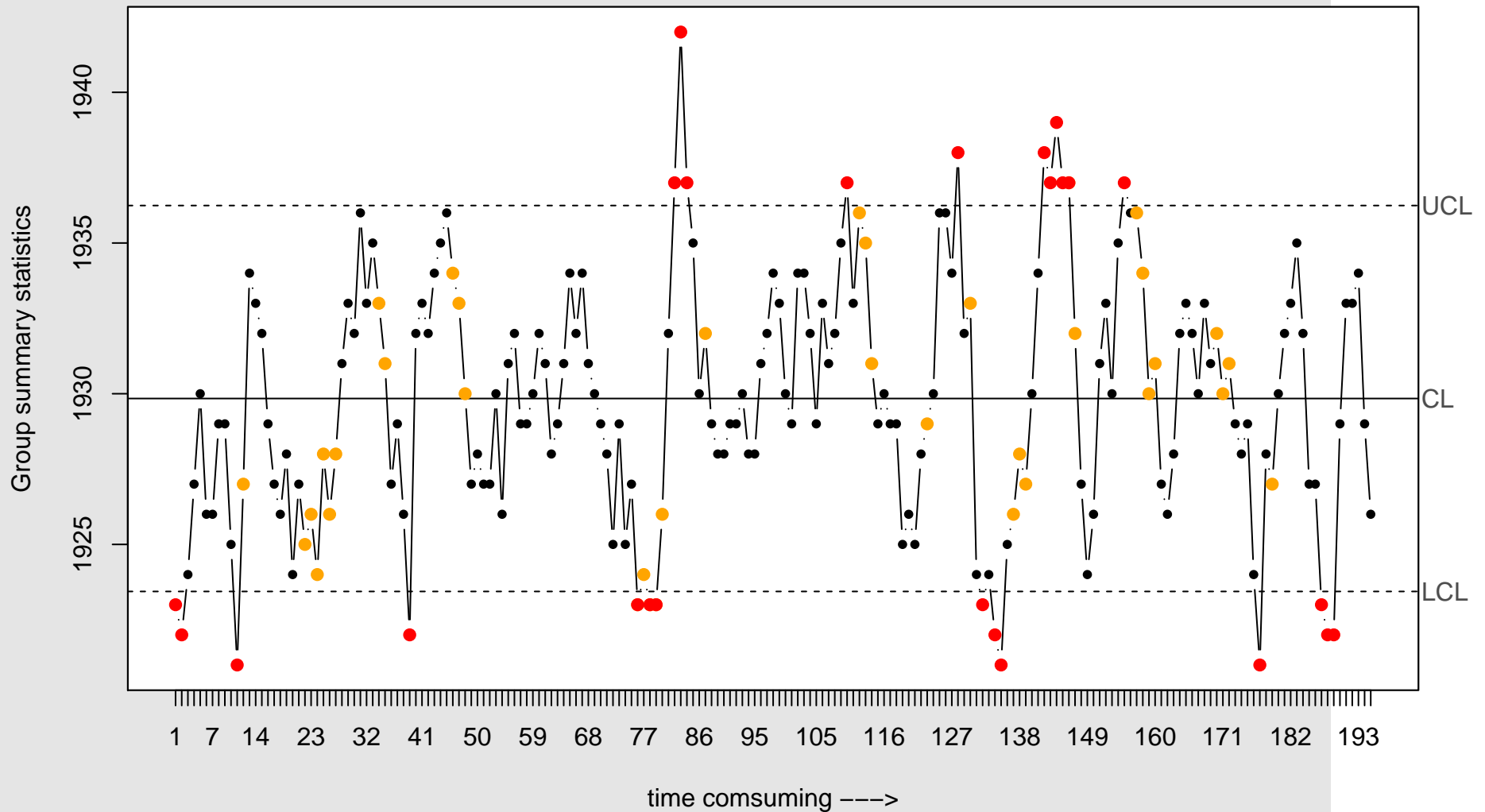
LCL = 1919.352

UCL = 1932.074

Number beyond limits = 20

Number violating runs = 39

# 14th column point of this product



Number of groups = 195

Center = 1929.841

StdDev = 2.134057

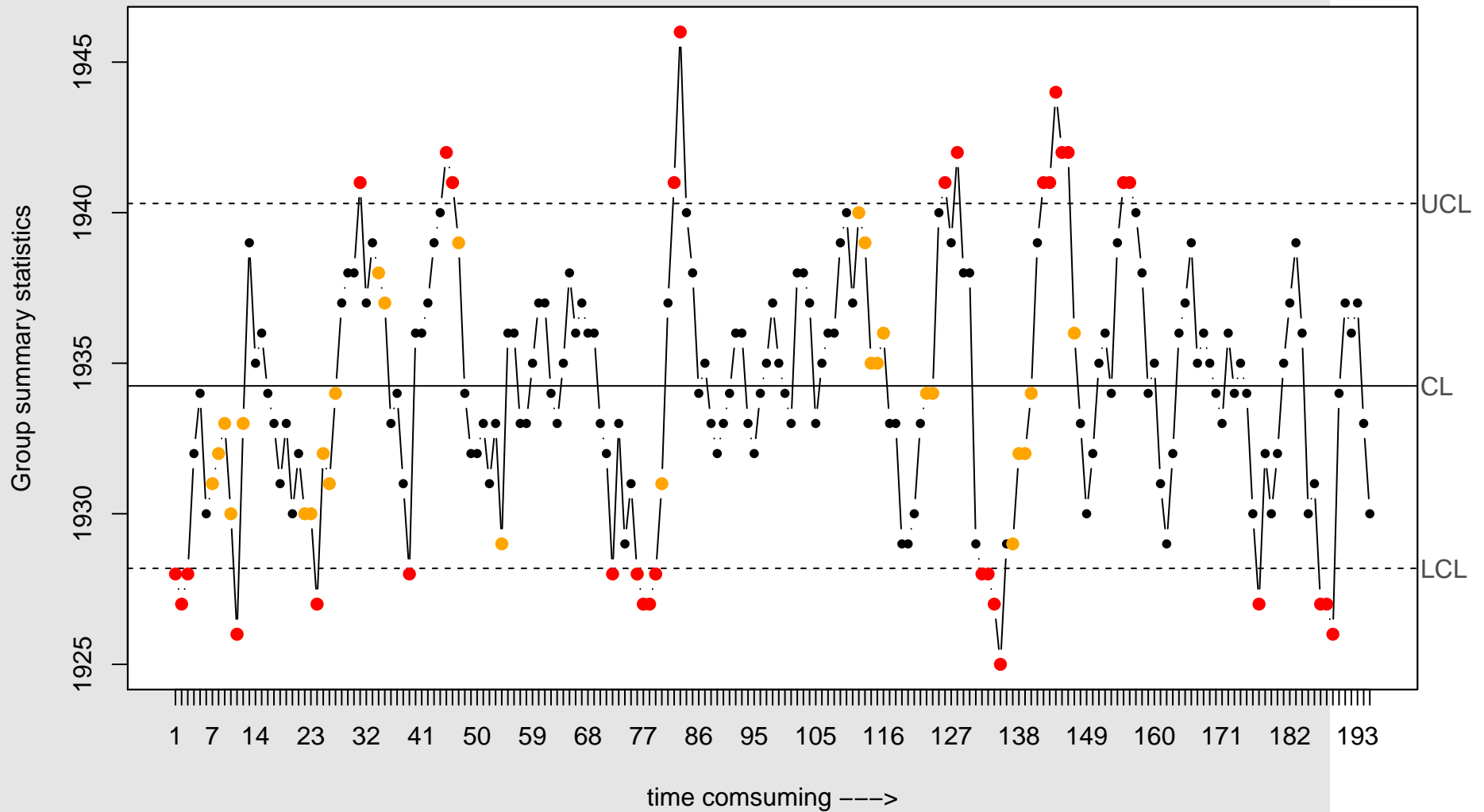
LCL = 1923.439

UCL = 1936.243

Number beyond limits = 25

Number violating runs = 36

# 15th column point of this product



Number of groups = 195

Center = 1934.246

StdDev = 2.019814

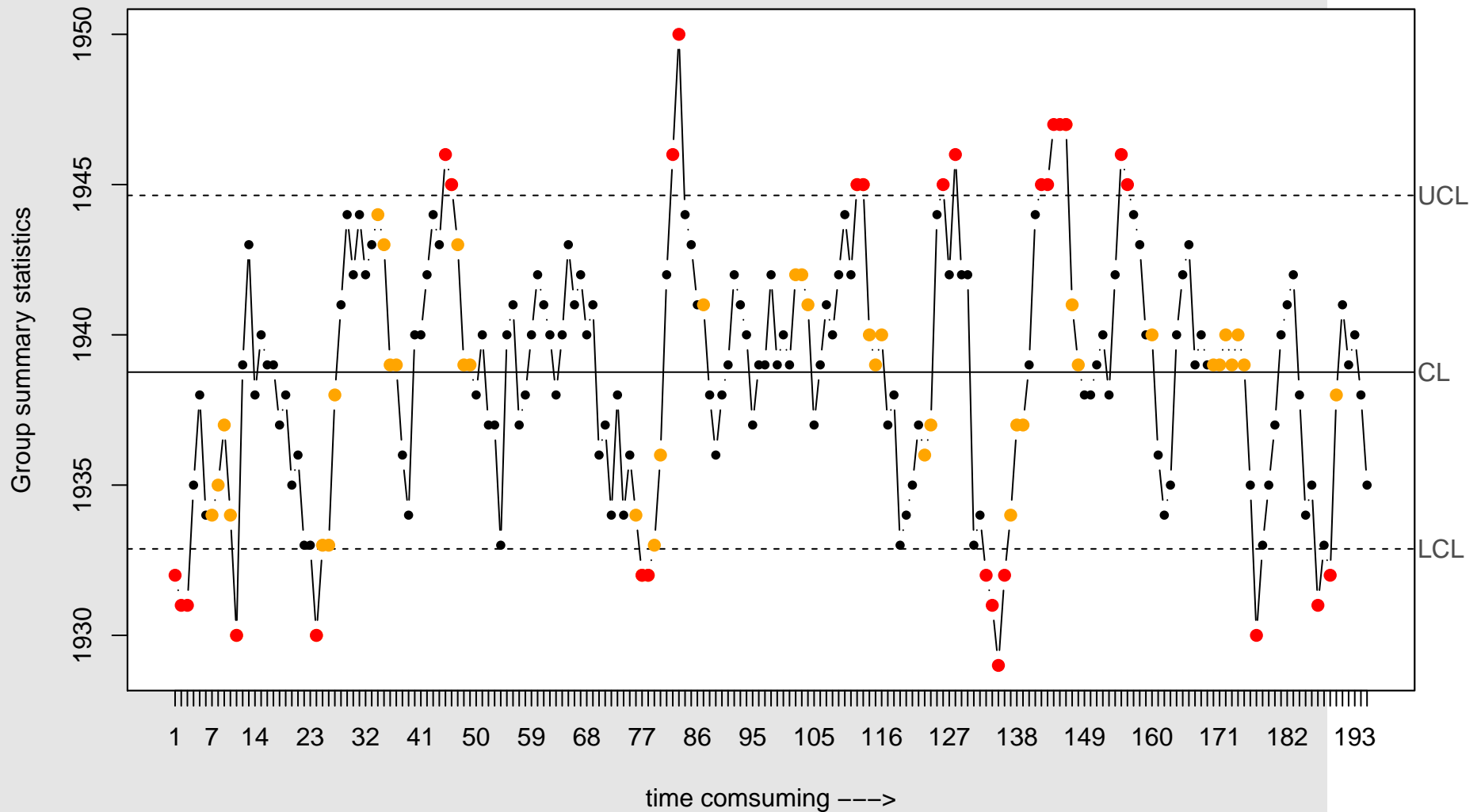
LCL = 1928.187

UCL = 1940.306

Number beyond limits = 33

Number violating runs = 34

# 16th column point of this product



Number of groups = 195

Center = 1938.759

StdDev = 1.960408

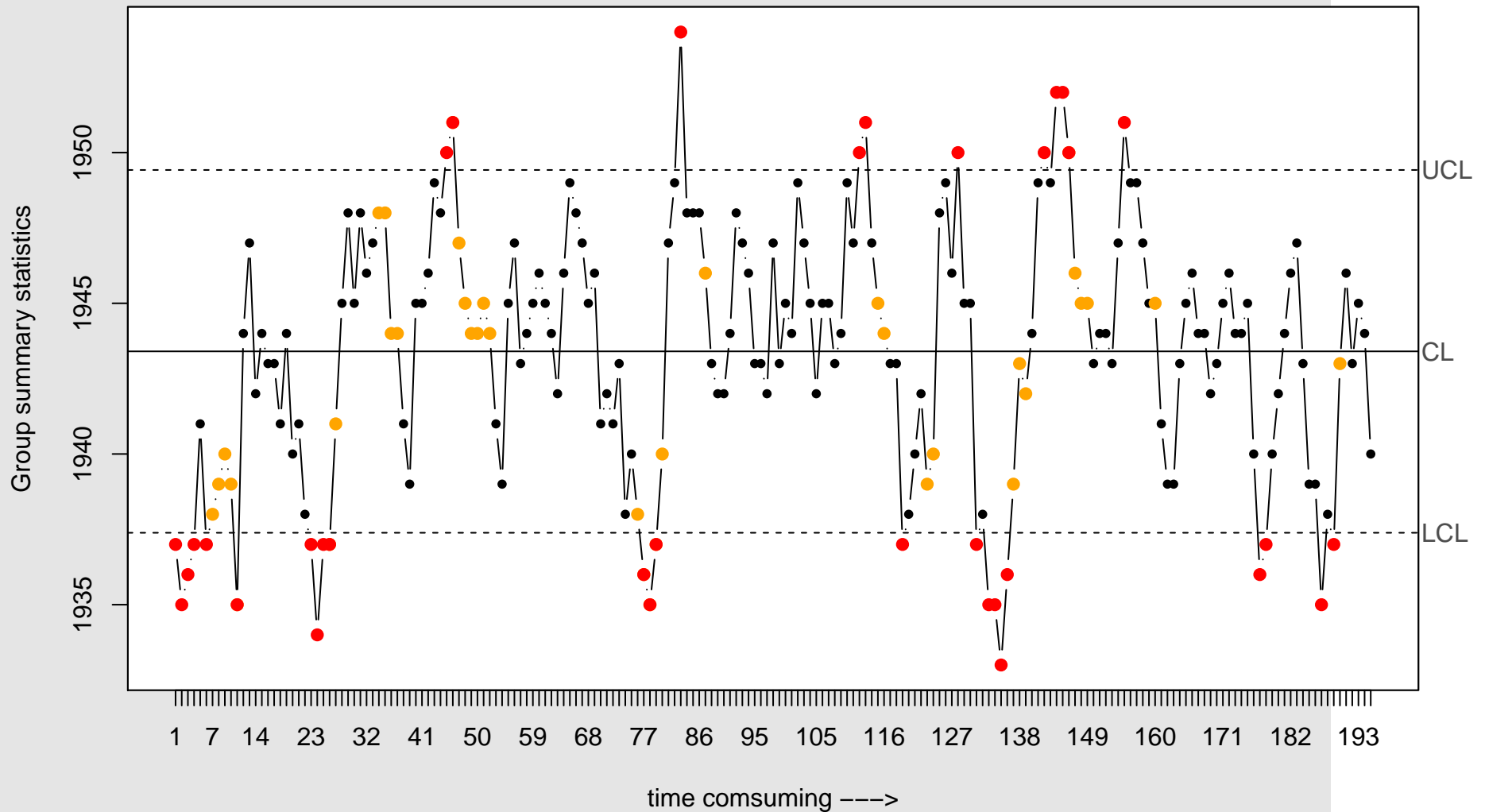
LCL = 1932.878

UCL = 1944.64

Number beyond limits = 29

Number violating runs = 47

# 17th column point of this product



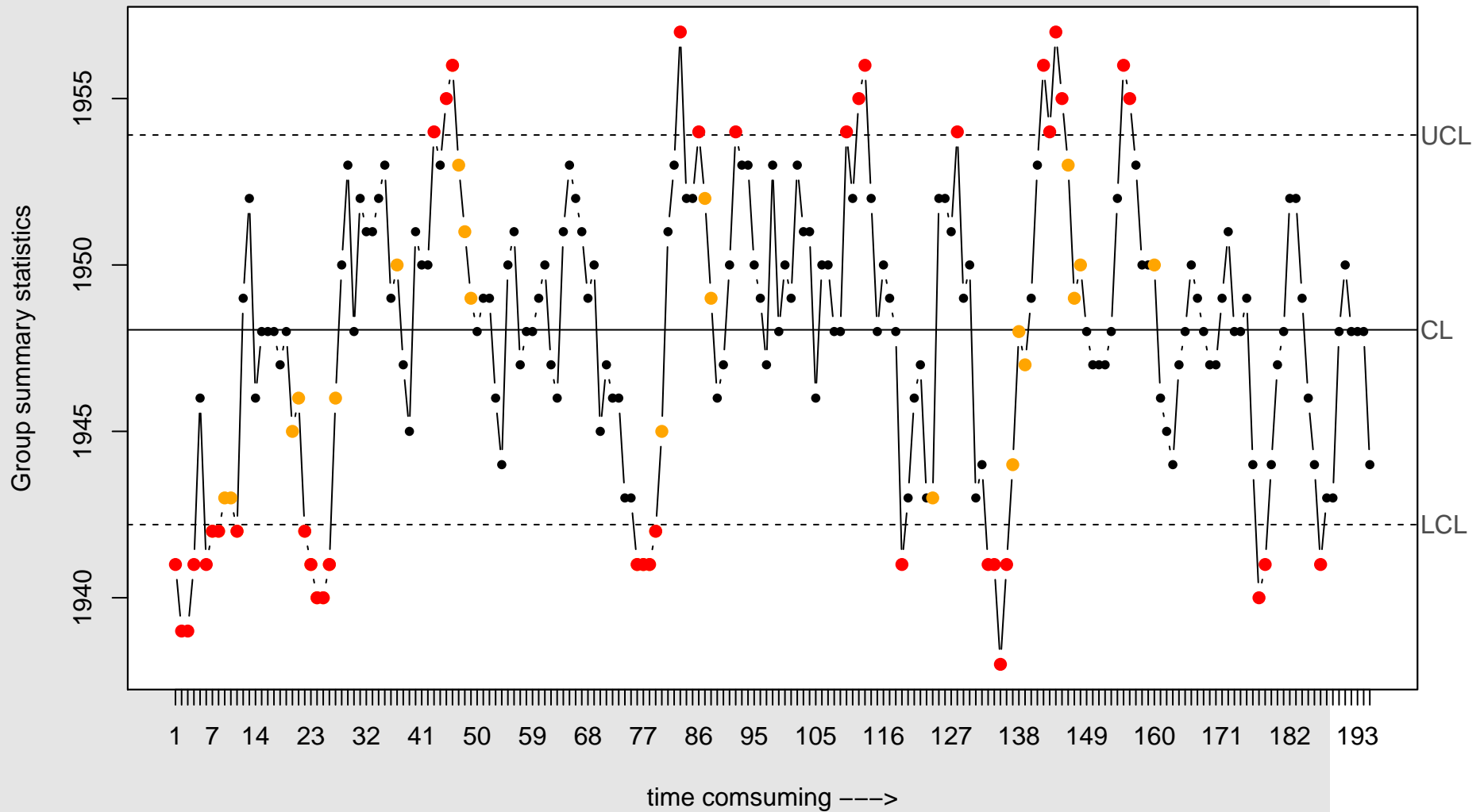
Number of groups = 195  
Center = 1943.405  
StdDev = 2.006105

LCL = 1937.387  
UCL = 1949.423

Number beyond limits = 34  
Number violating runs = 37



# 18th column point of this product



Number of groups = 195

Center = 1948.051

StdDev = 1.951269

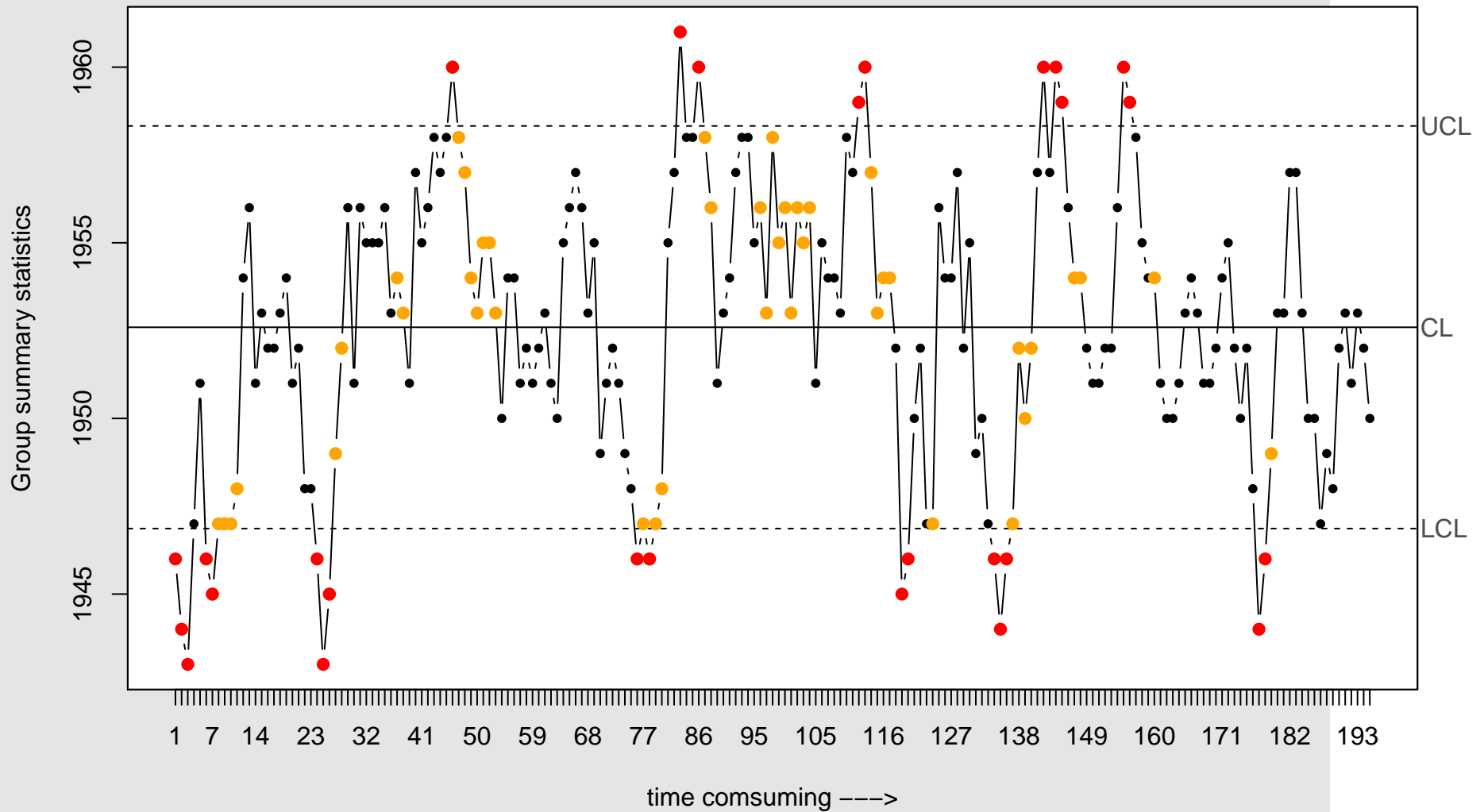
LCL = 1942.197

UCL = 1953.905

Number beyond limits = 41

Number violating runs = 33

# 19th column point of this product



Number of groups = 195

Center = 1952.595

StdDev = 1.910141

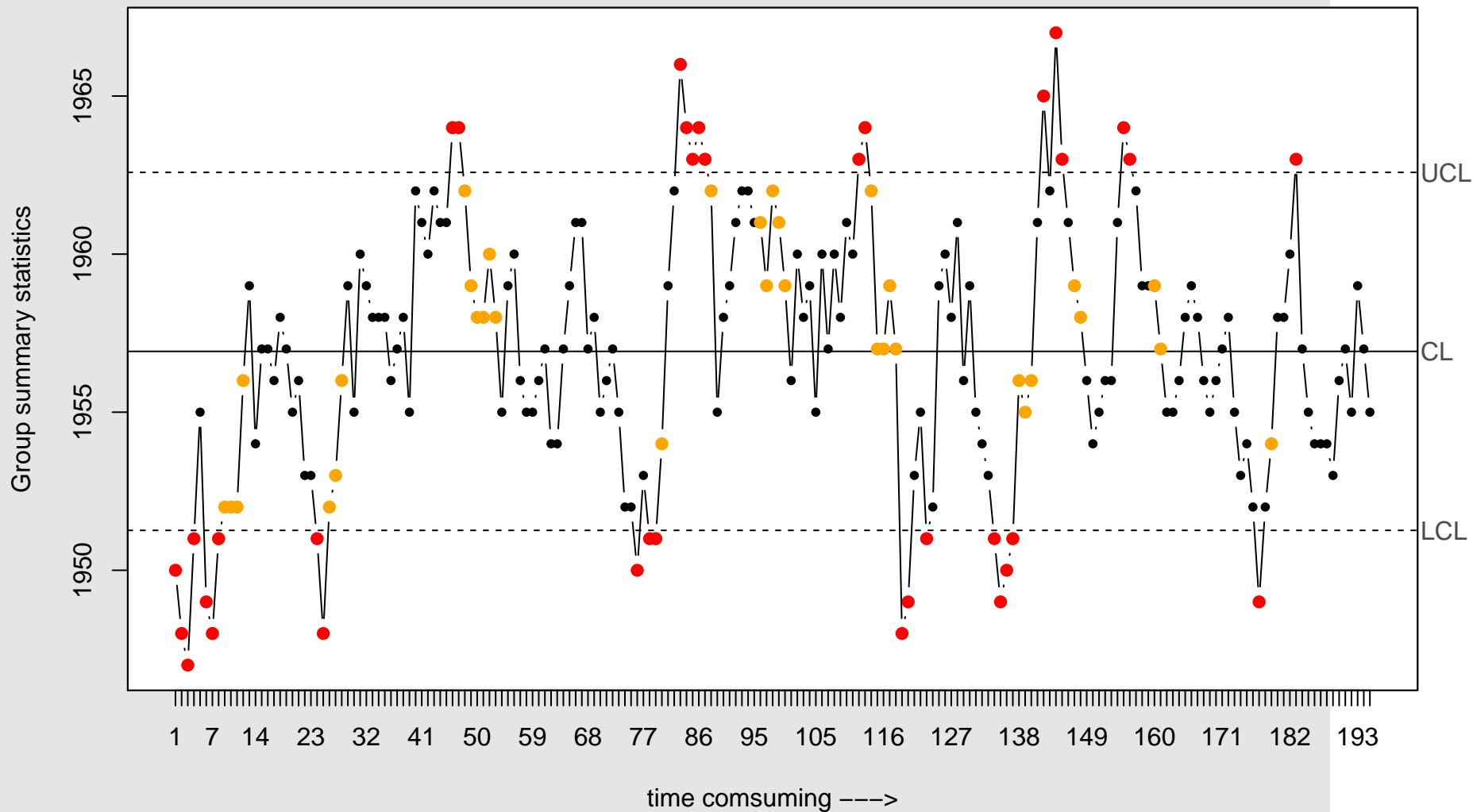
LCL = 1946.864

UCL = 1958.325

Number beyond limits = 27

Number violating runs = 49

## 20th column point of this product



Number of groups = 195

Center = 1956.923

StdDev = 1.887293

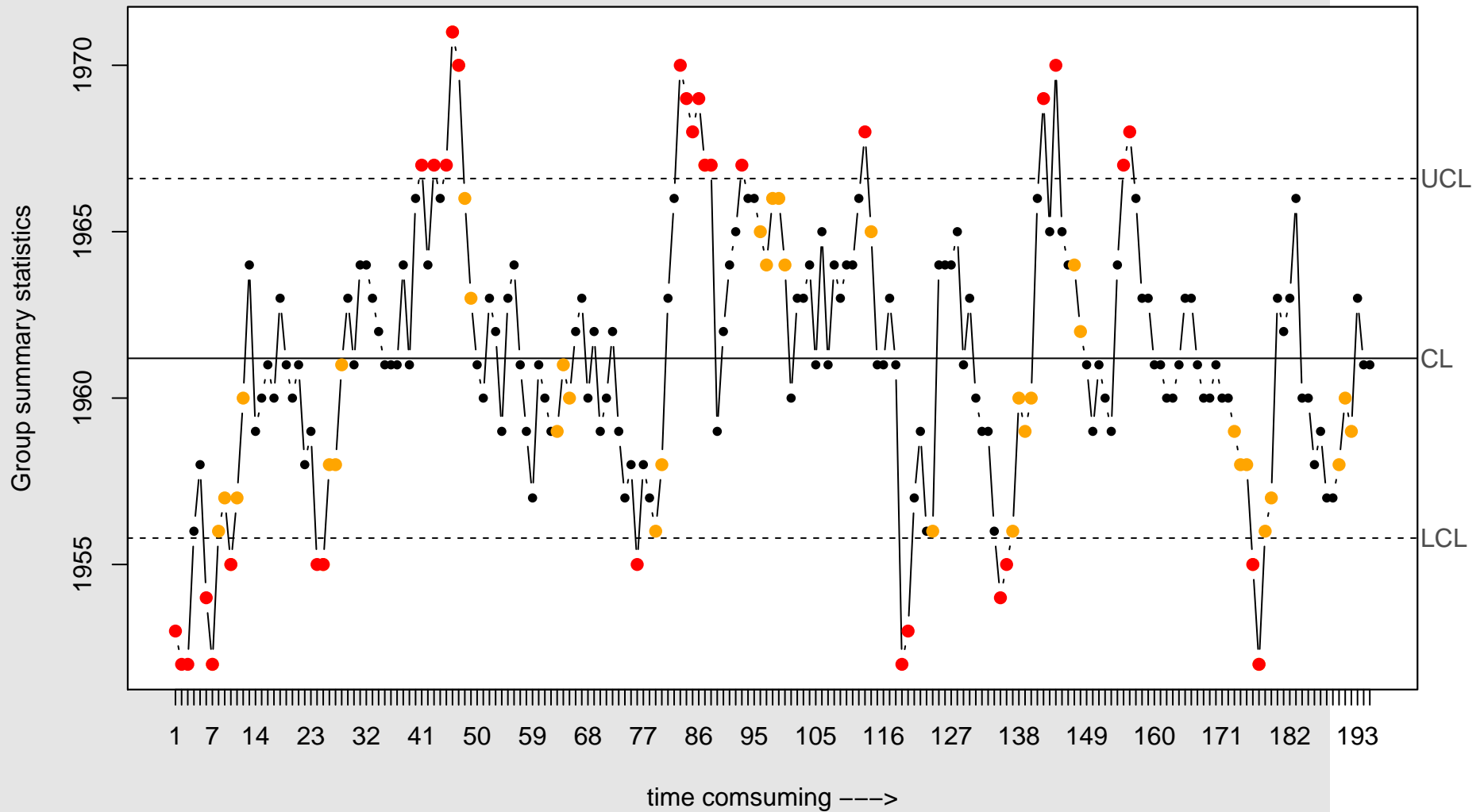
LCL = 1951.261

UCL = 1962.585

Number beyond limits = 35

Number violating runs = 42

## 21th column point of this product



Number of groups = 195

Center = 1961.195

StdDev = 1.800468

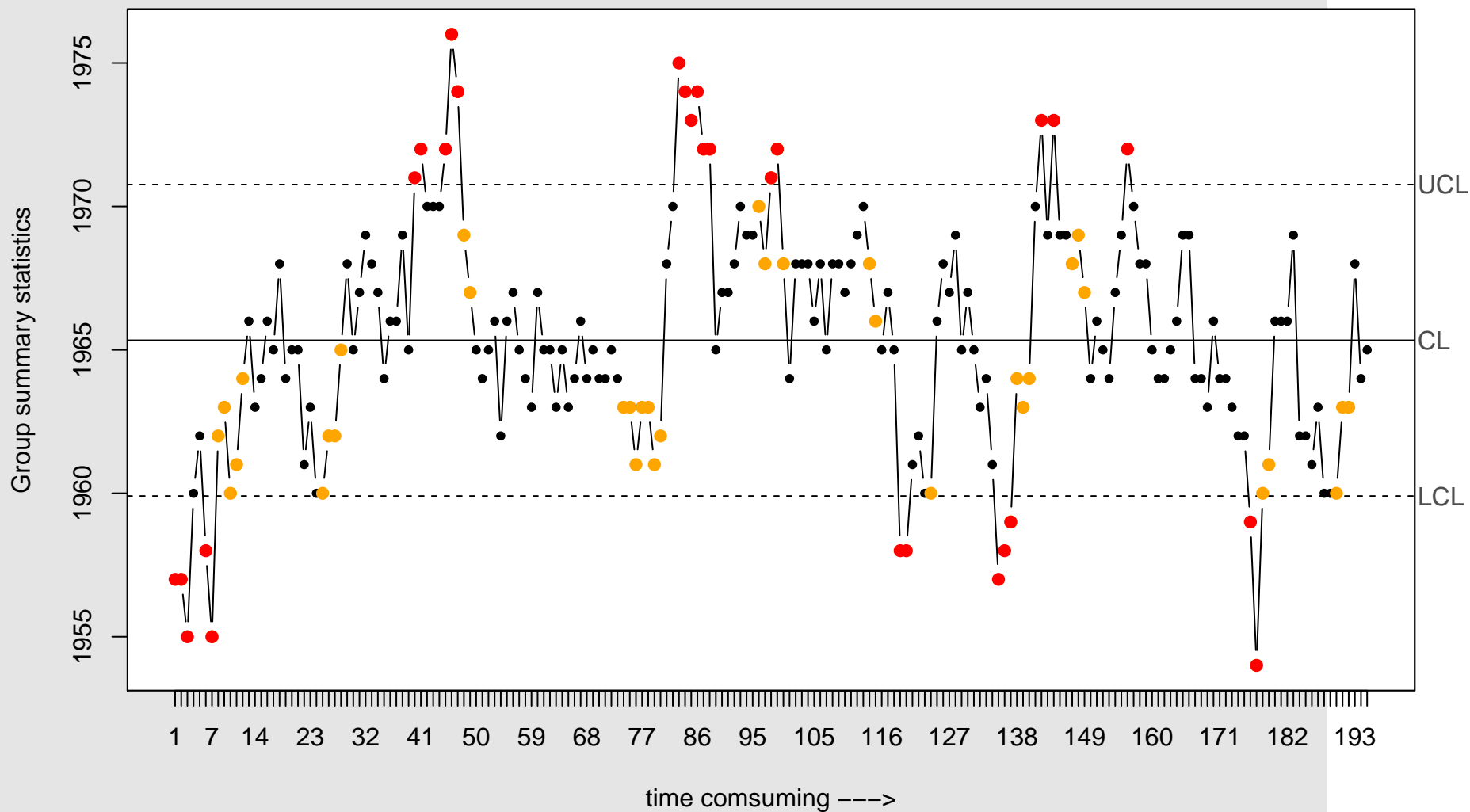
LCL = 1955.793

UCL = 1966.596

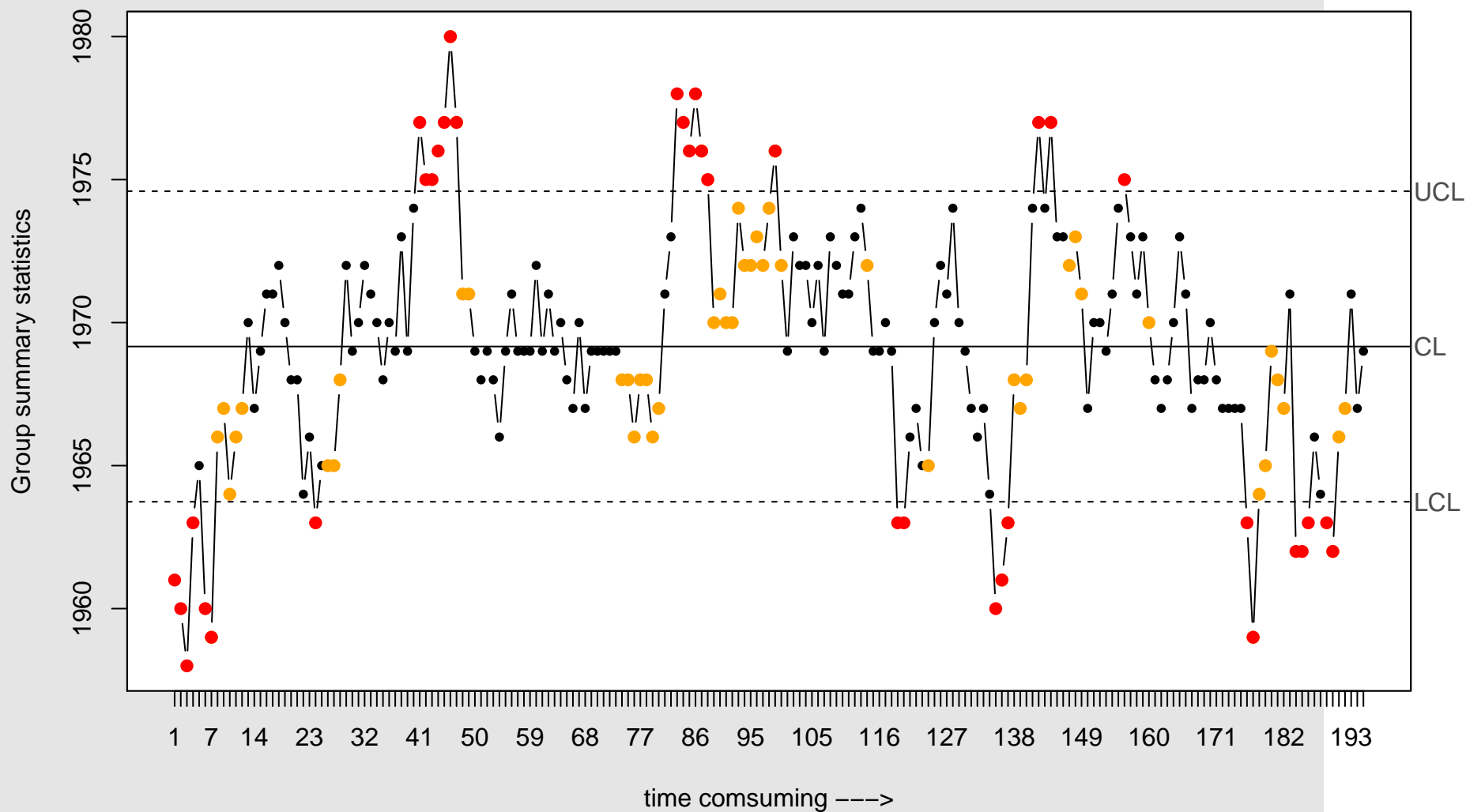
Number beyond limits = 32

Number violating runs = 44

## 22th column point of this product



## 23th column point of this product

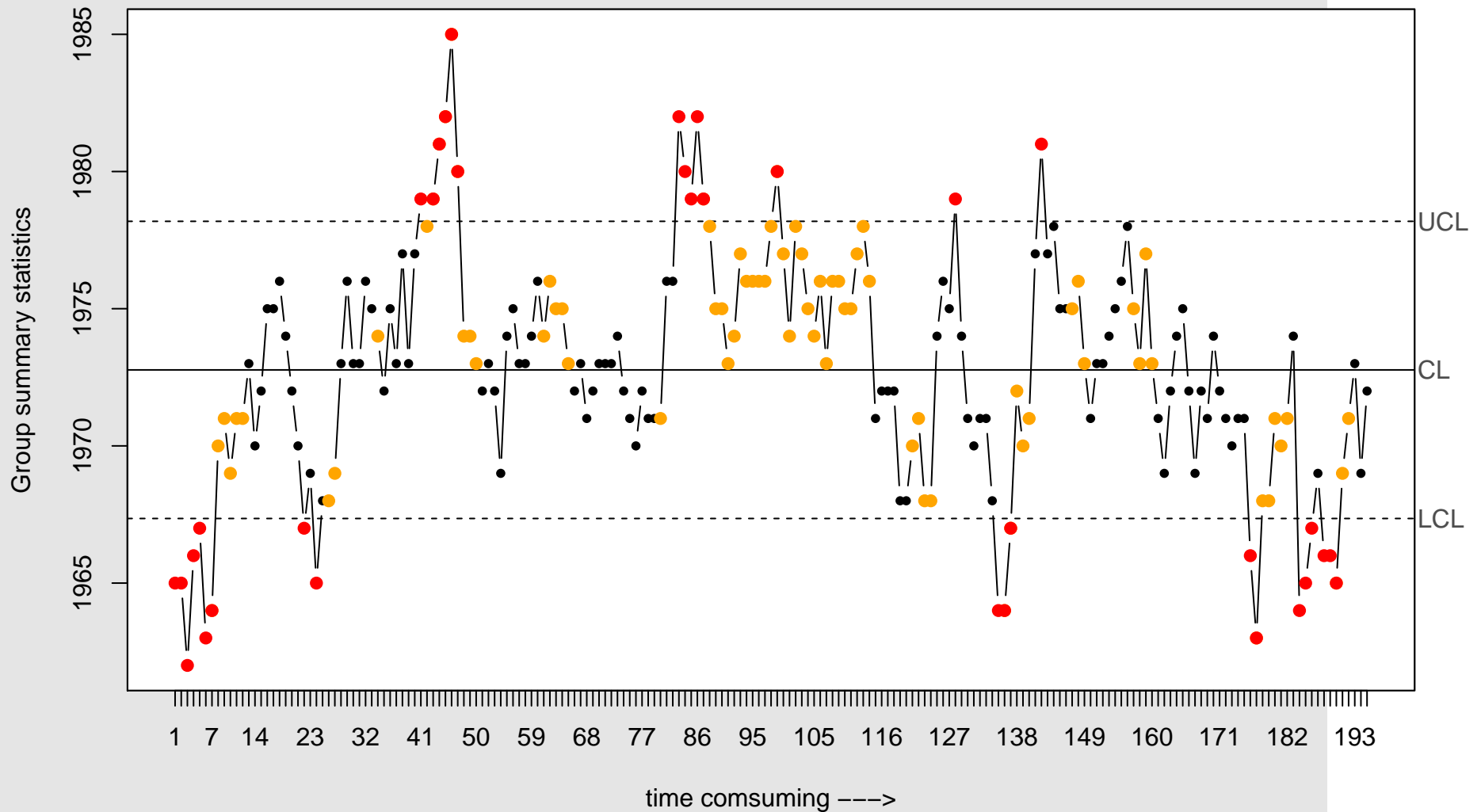


Number of groups = 195  
Center = 1969.164  
StdDev = 1.809607

LCL = 1963.735  
UCL = 1974.593

Number beyond limits = 36  
Number violating runs = 54

## 24th column point of this product



Number of groups = 195

Center = 1972.769

StdDev = 1.805038

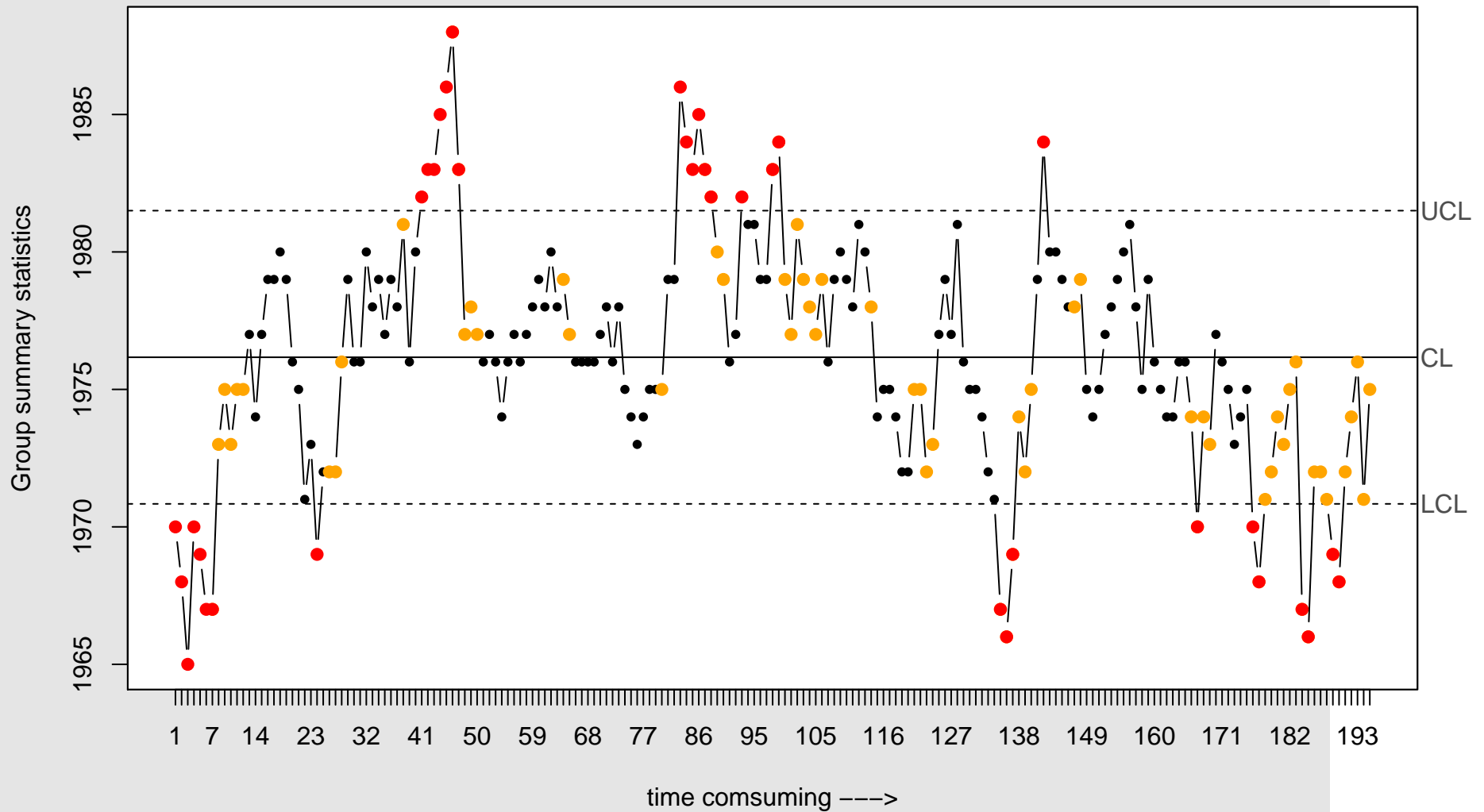
LCL = 1967.354

UCL = 1978.184

Number beyond limits = 34

Number violating runs = 77

## 25th column point of this product



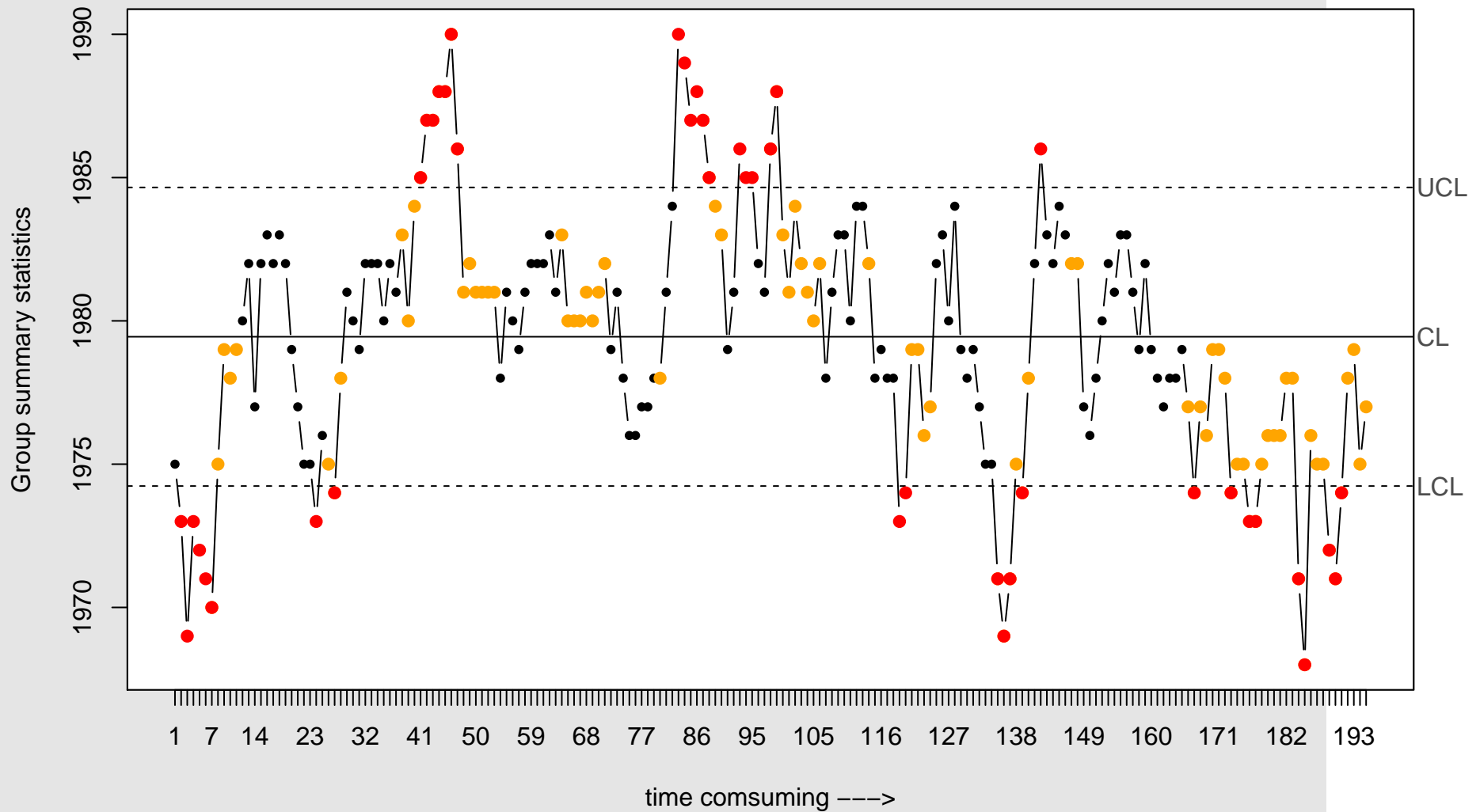
Number of groups = 195  
 Center = 1976.169  
 StdDev = 1.777619

LCL = 1970.836  
 UCL = 1981.502

Number beyond limits = 35  
 Number violating runs = 67



## 26th column point of this product



Number of groups = 195

Center = 1979.446

StdDev = 1.736492

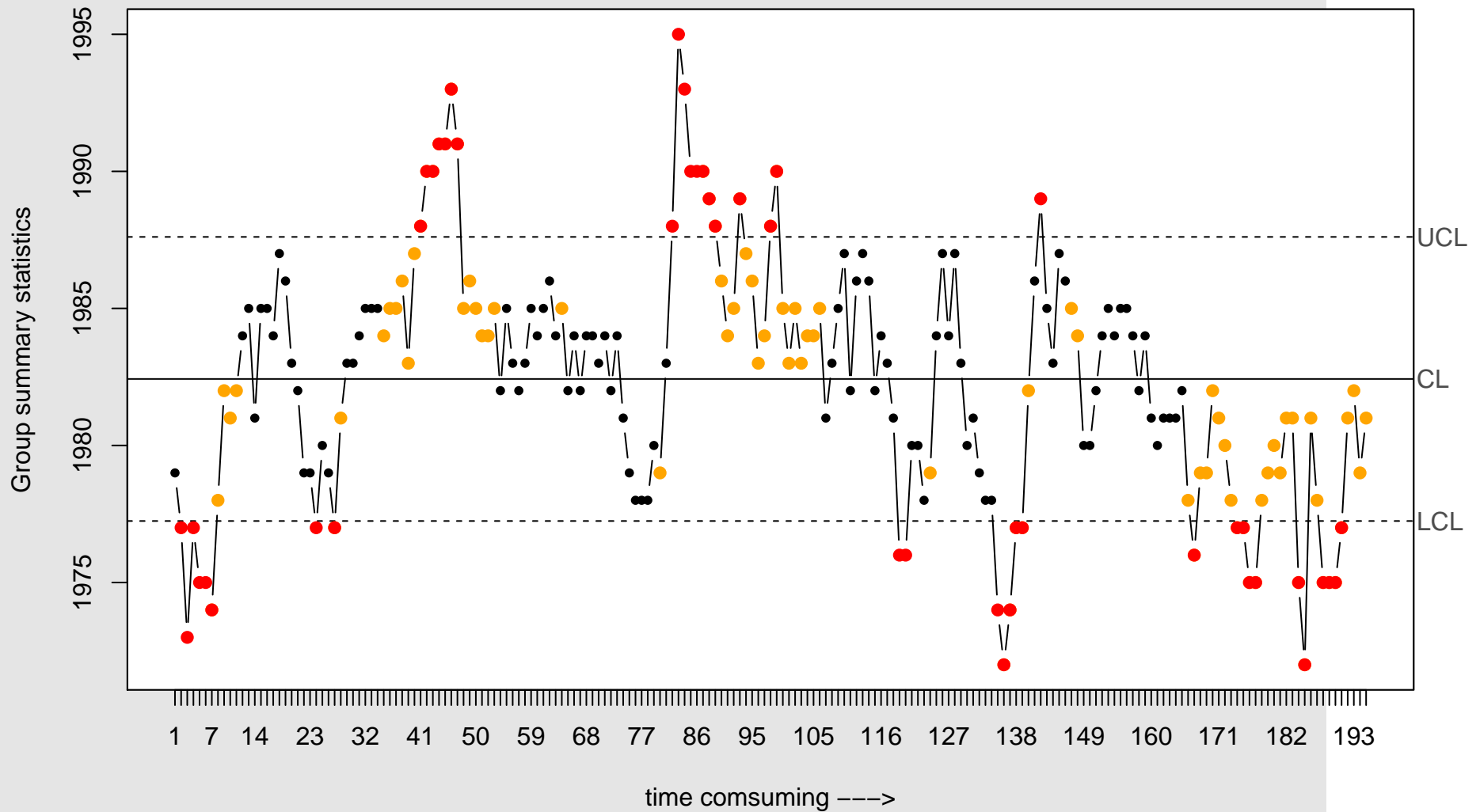
LCL = 1974.237

UCL = 1984.656

Number beyond limits = 42

Number violating runs = 89

## 27th column point of this product



Number of groups = 195

Center = 1982.426

StdDev = 1.727352

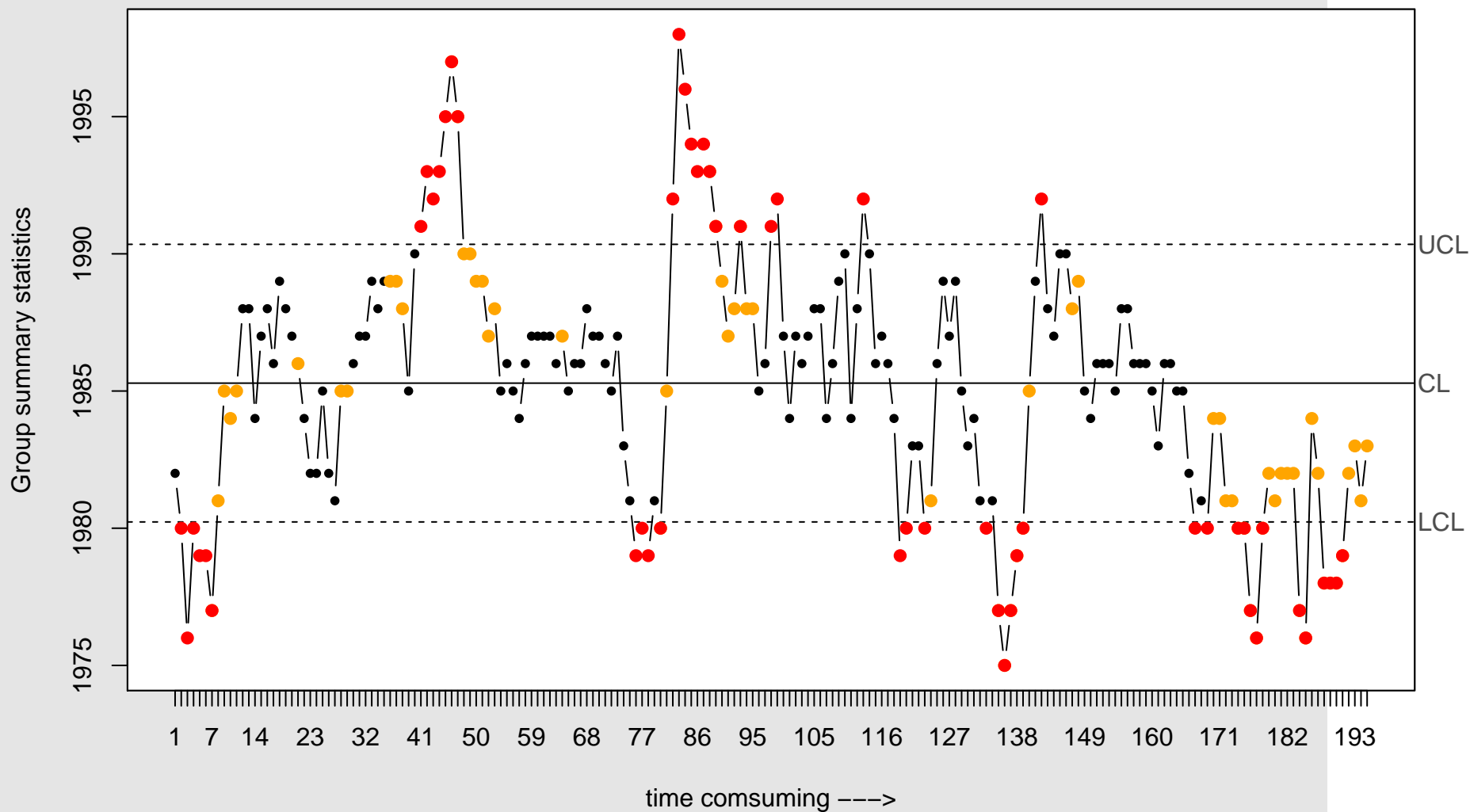
LCL = 1977.244

UCL = 1987.608

Number beyond limits = 45

Number violating runs = 86

## 28th column point of this product



Number of groups = 195

Center = 1985.287

StdDev = 1.686225

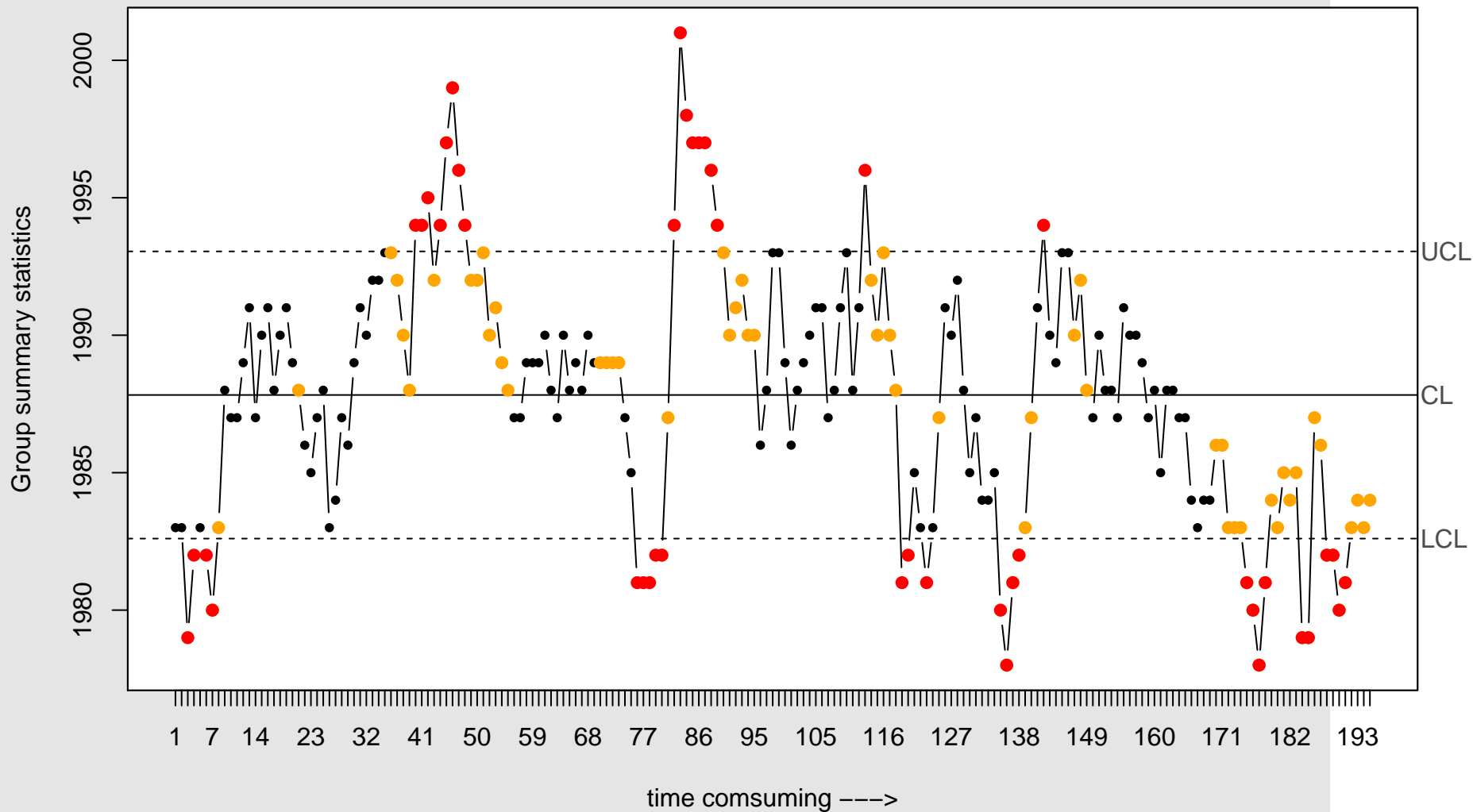
LCL = 1980.229

UCL = 1990.346

Number beyond limits = 52

Number violating runs = 65

## 29th column point of this product



Number of groups = 195

Center = 1987.826

StdDev = 1.741062

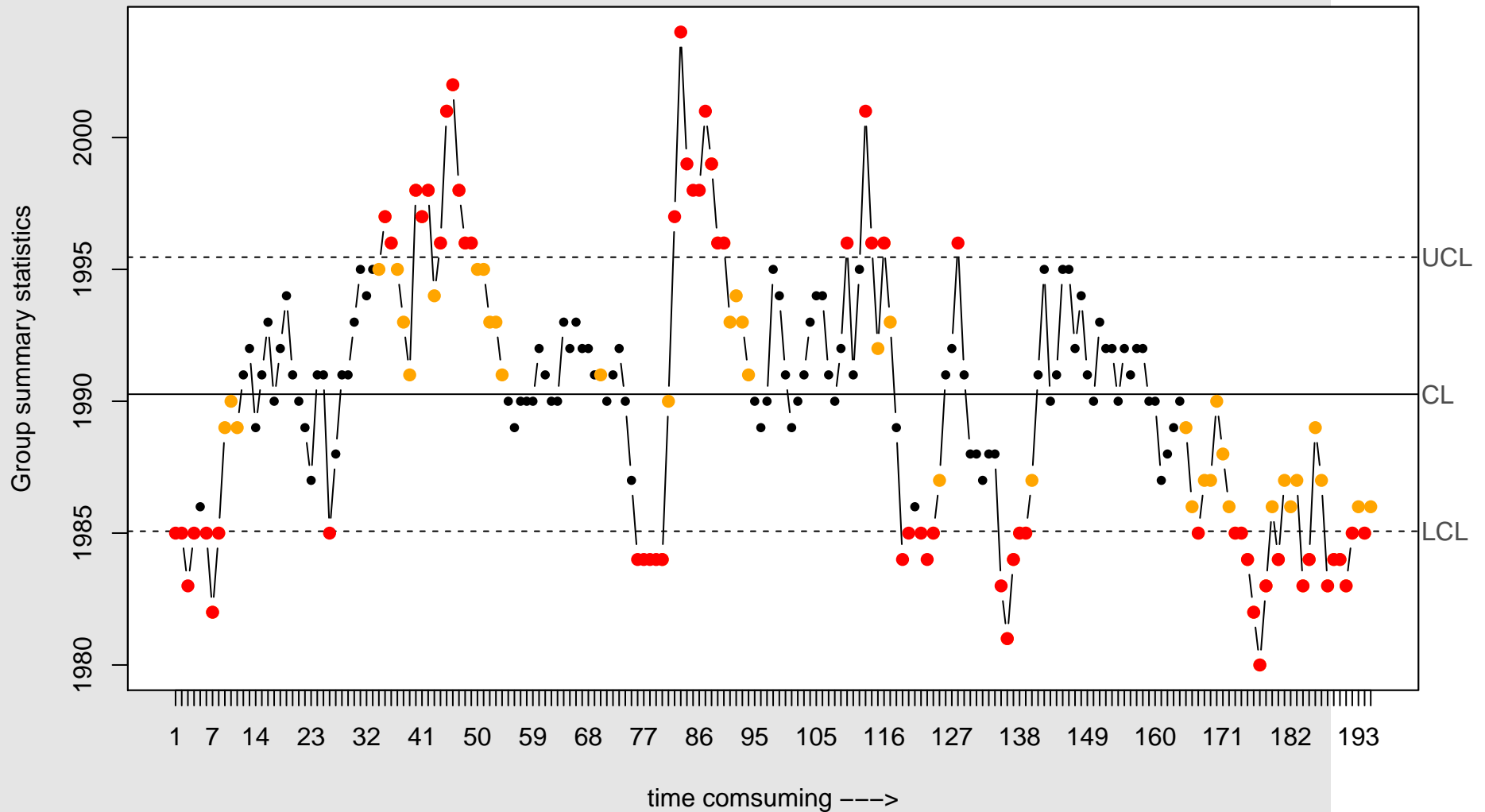
LCL = 1982.602

UCL = 1993.049

Number beyond limits = 44

Number violating runs = 77

### 30th column point of this product



Number of groups = 195

Center = 1990.267

StdDev = 1.731922

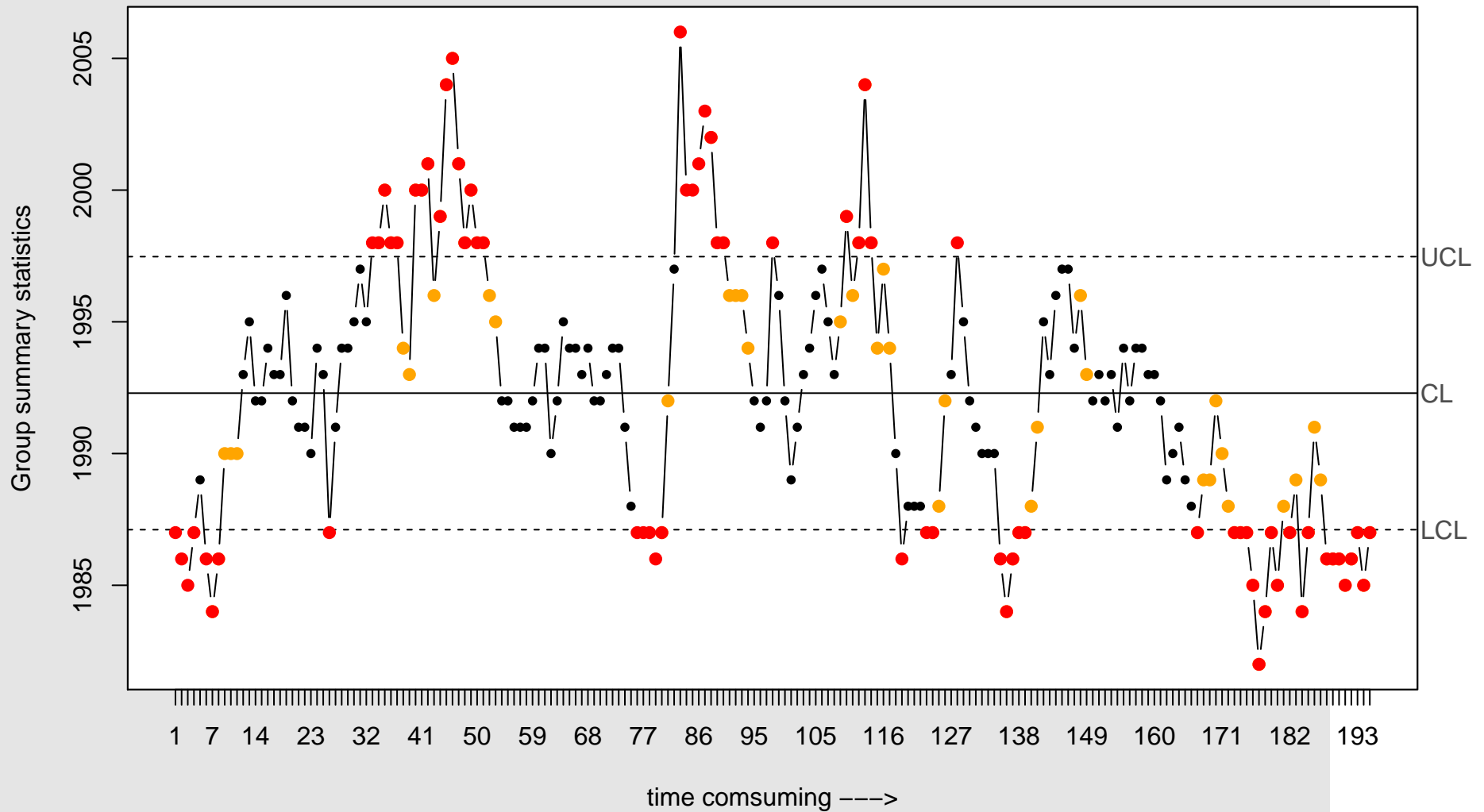
LCL = 1985.071

UCL = 1995.462

Number beyond limits = 64

Number violating runs = 77

### 31th column point of this product



Number of groups = 195

Center = 1992.292

StdDev = 1.727352

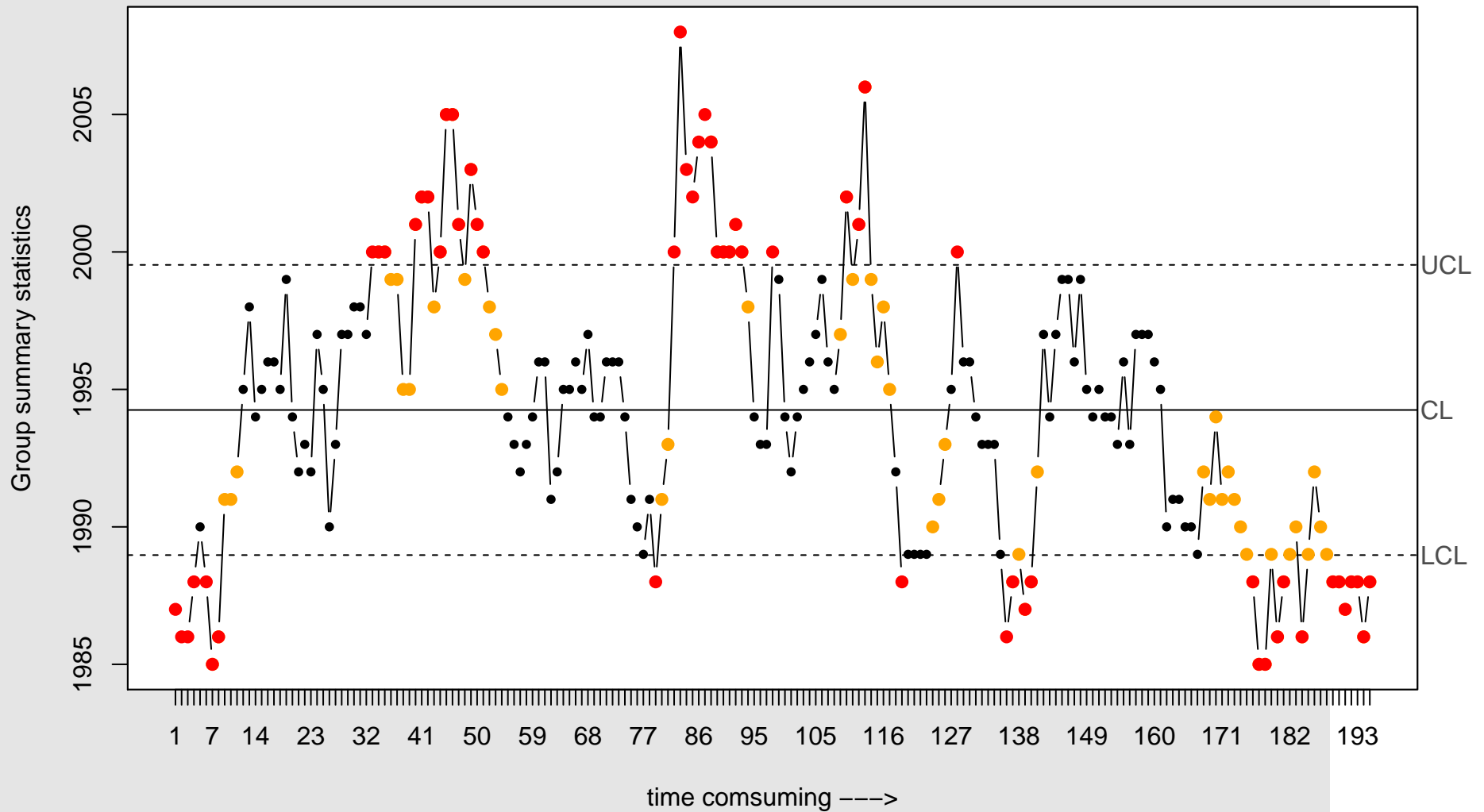
LCL = 1987.11

UCL = 1997.474

Number beyond limits = 71

Number violating runs = 83

### 32th column point of this product



Number of groups = 195

Center = 1994.251

StdDev = 1.75934

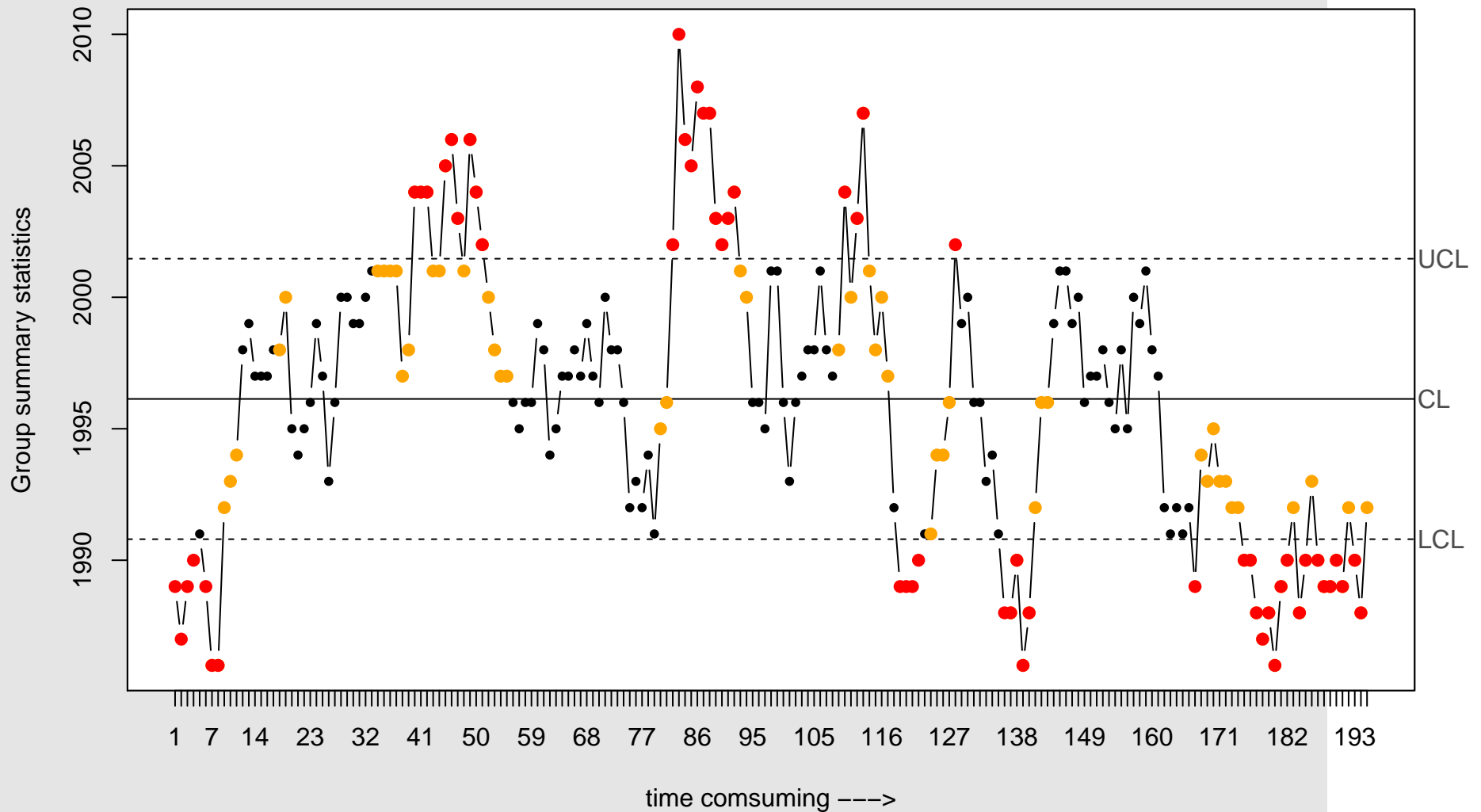
LCL = 1988.973

UCL = 1999.529

Number beyond limits = 56

Number violating runs = 80

### 33th column point of this product



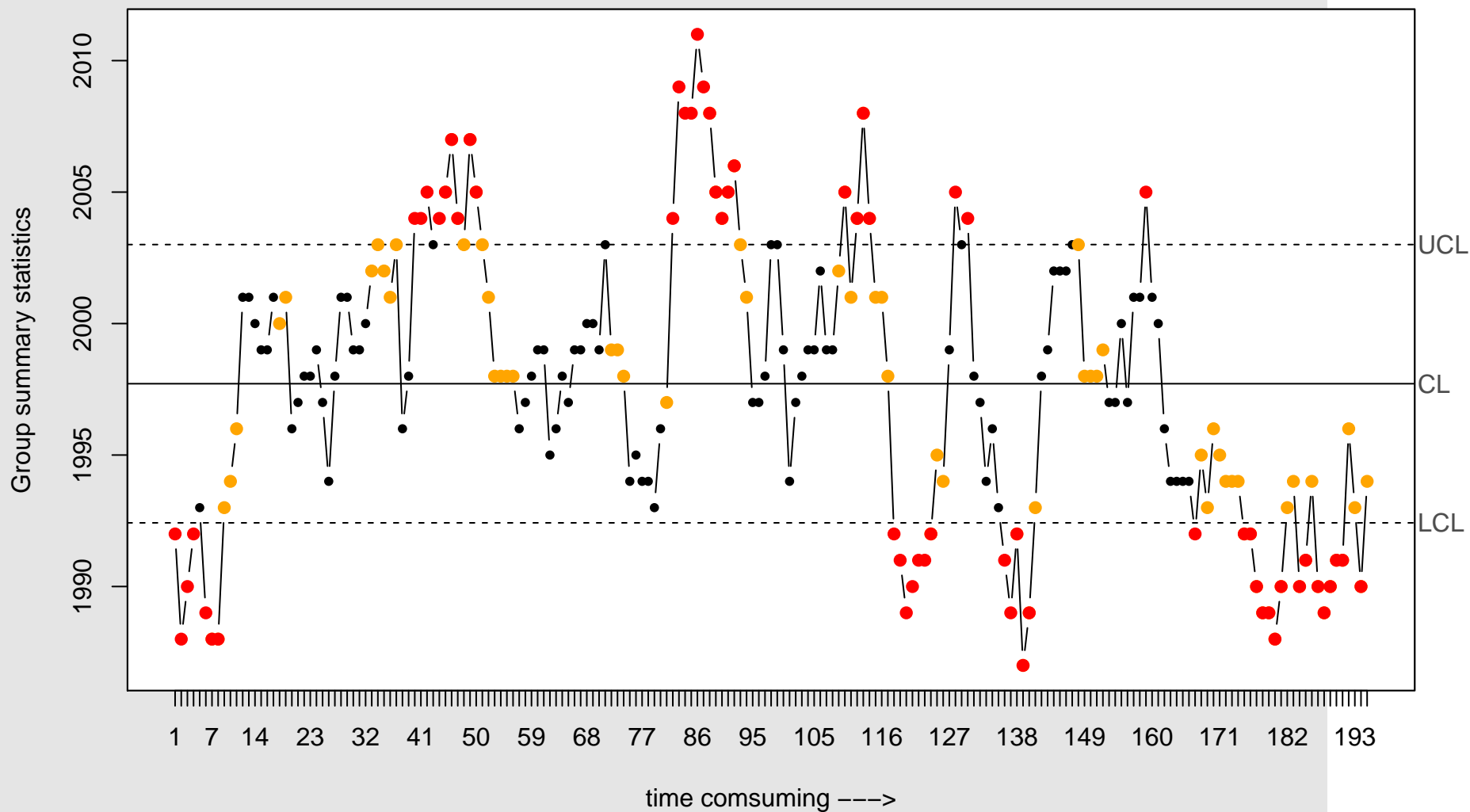
Number of groups = 195  
 Center = 1996.133  
 StdDev = 1.777619

LCL = 1990.8  
 UCL = 2001.466

Number beyond limits = 58  
 Number violating runs = 86



### 34th column point of this product

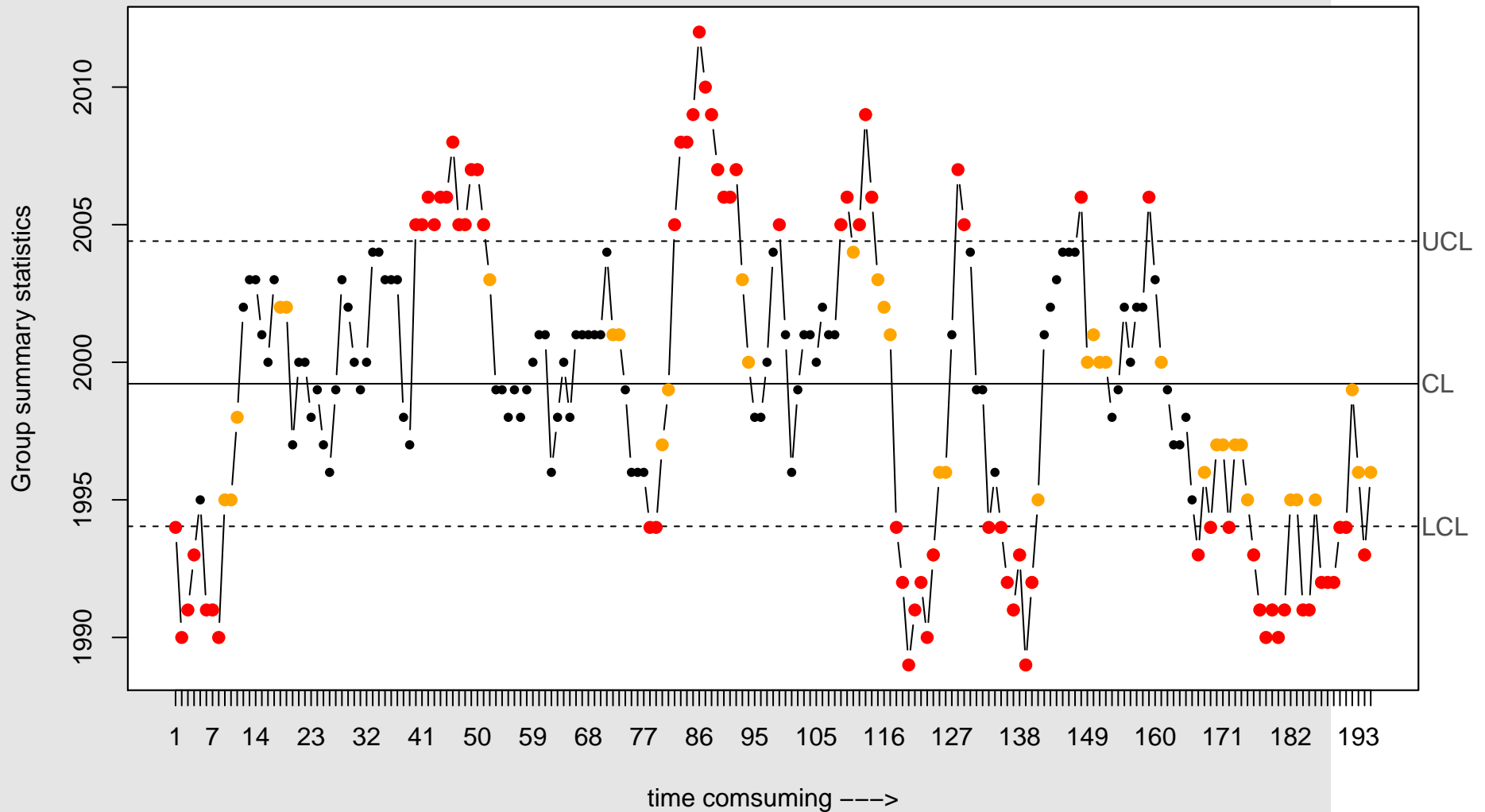


Number of groups = 195  
Center = 1997.713  
StdDev = 1.76391

LCL = 1992.421  
UCL = 2003.005

Number beyond limits = 62  
Number violating runs = 84

### 35th column point of this product

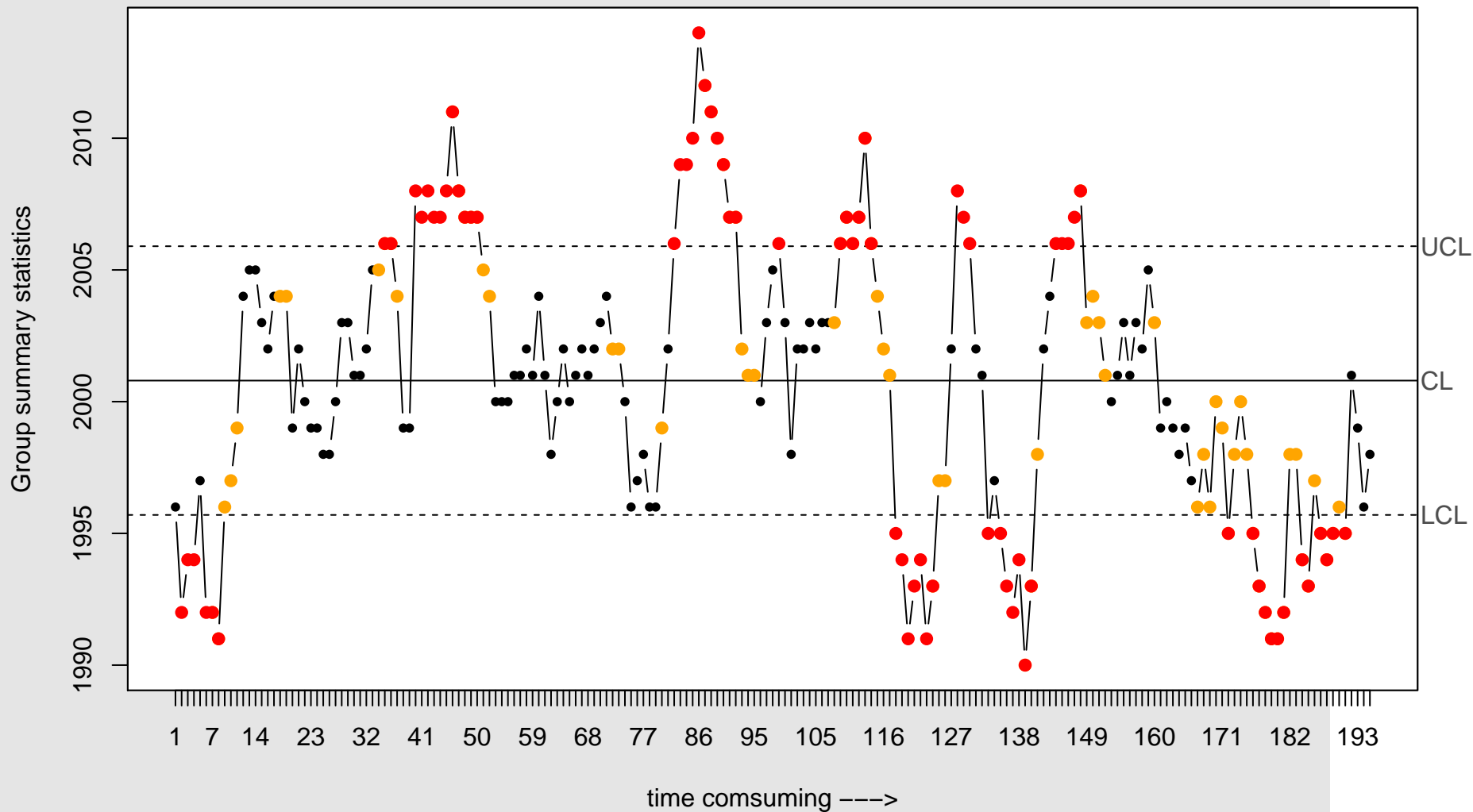


Number of groups = 195  
 Center = 1999.221  
 StdDev = 1.727352

LCL = 1994.038  
 UCL = 2004.403

Number beyond limits = 73  
 Number violating runs = 76

### 36th column point of this product



Number of groups = 195

Center = 2000.8

StdDev = 1.699934

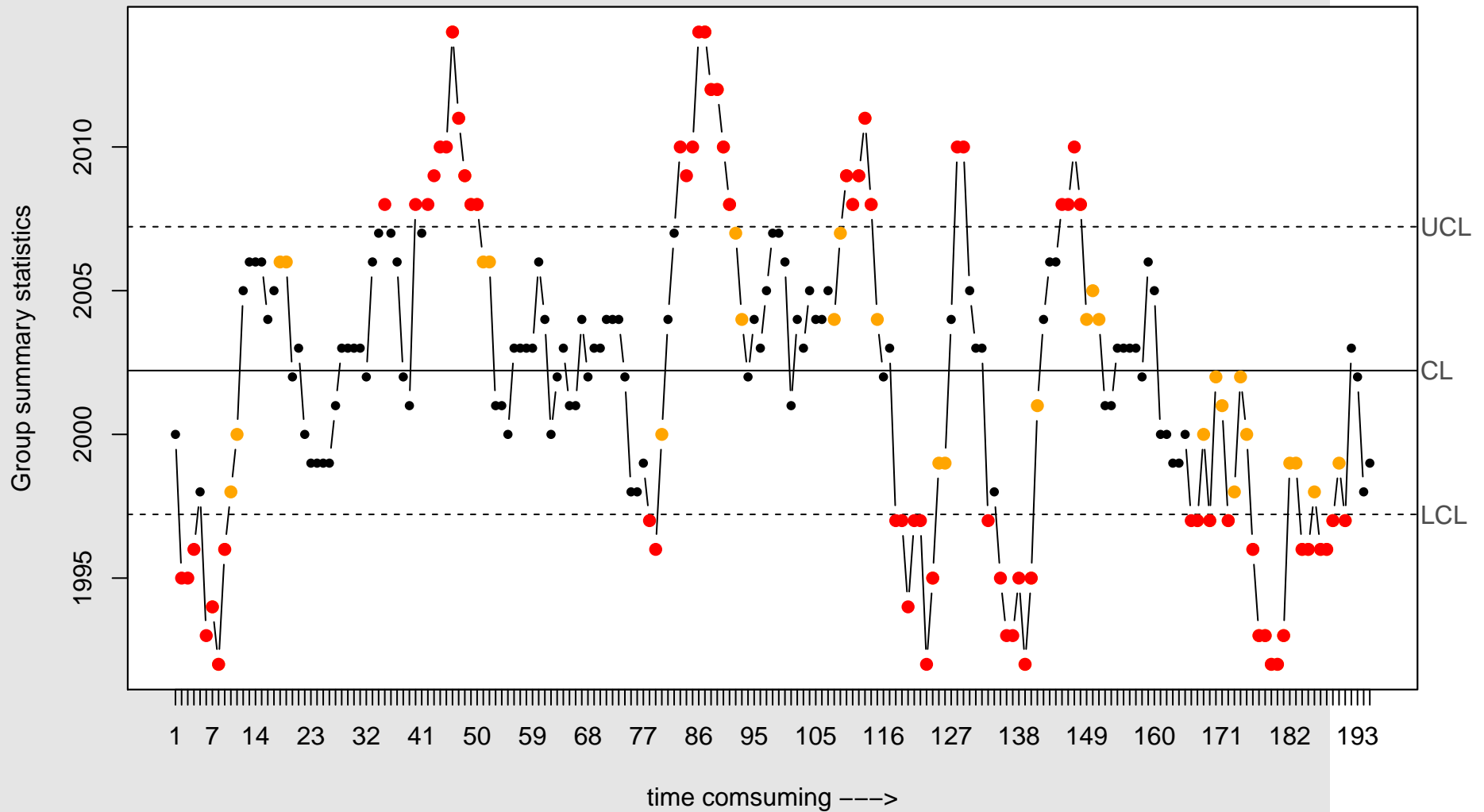
LCL = 1995.7

UCL = 2005.9

Number beyond limits = 72

Number violating runs = 77

### 37th column point of this product



Number of groups = 195

Center = 2002.221

StdDev = 1.667946

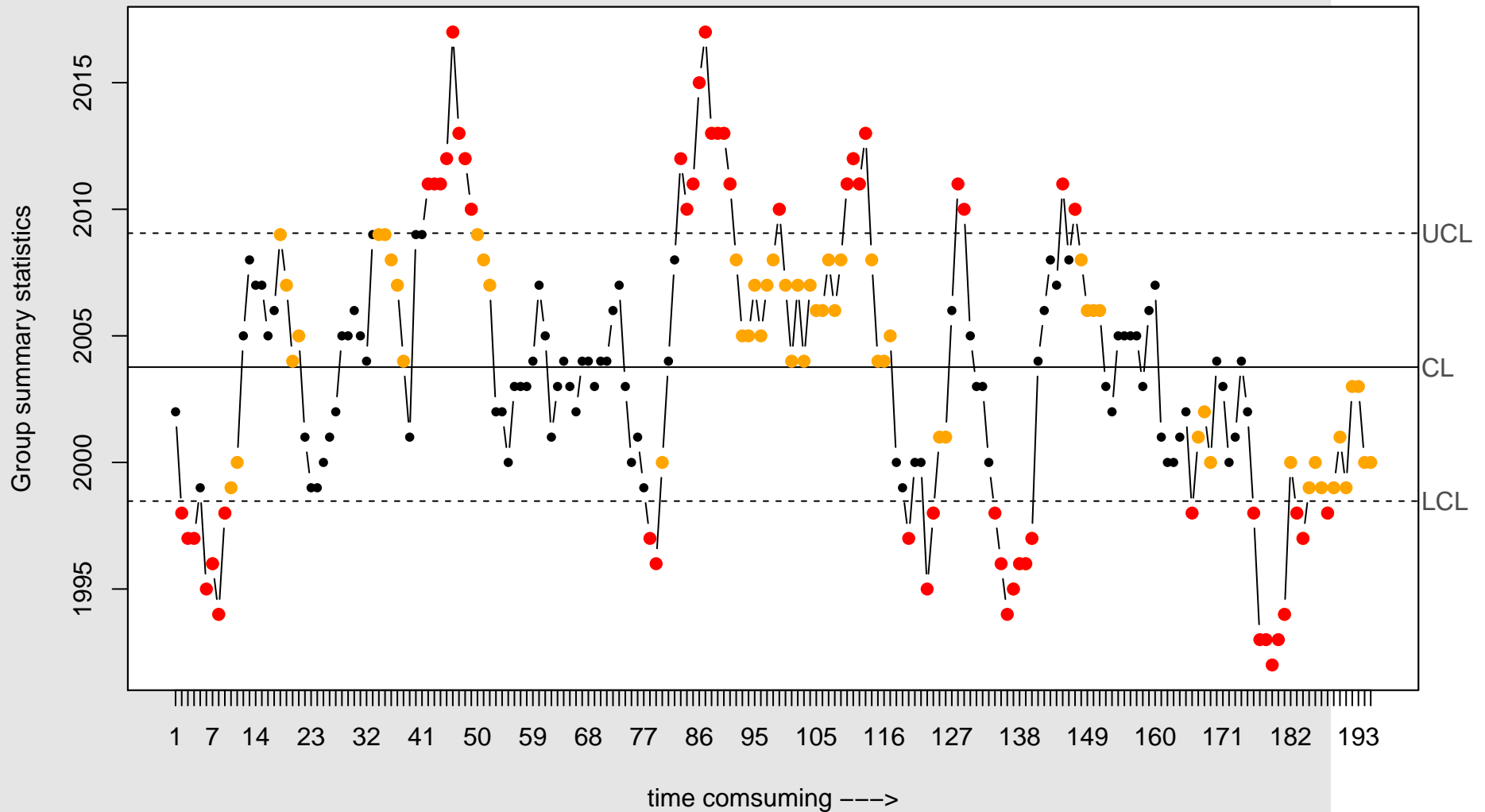
LCL = 1997.217

UCL = 2007.224

Number beyond limits = 70

Number violating runs = 65

### 38th column point of this product

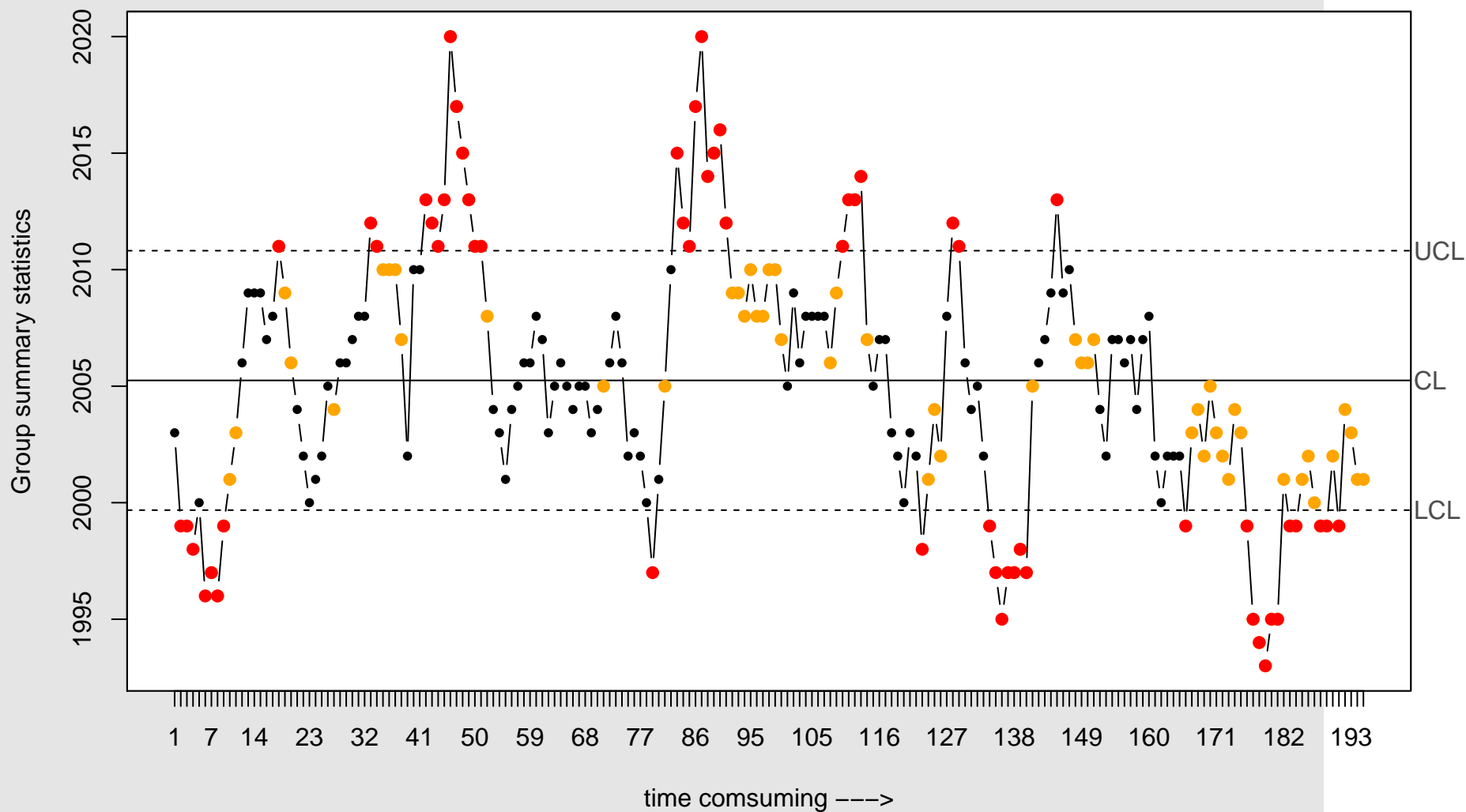


Number of groups = 195  
 Center = 2003.764  
 StdDev = 1.76391

LCL = 1998.472  
 UCL = 2009.056

Number beyond limits = 55  
 Number violating runs = 83

### 39th column point of this product



Number of groups = 195

Center = 2005.246

StdDev = 1.855305

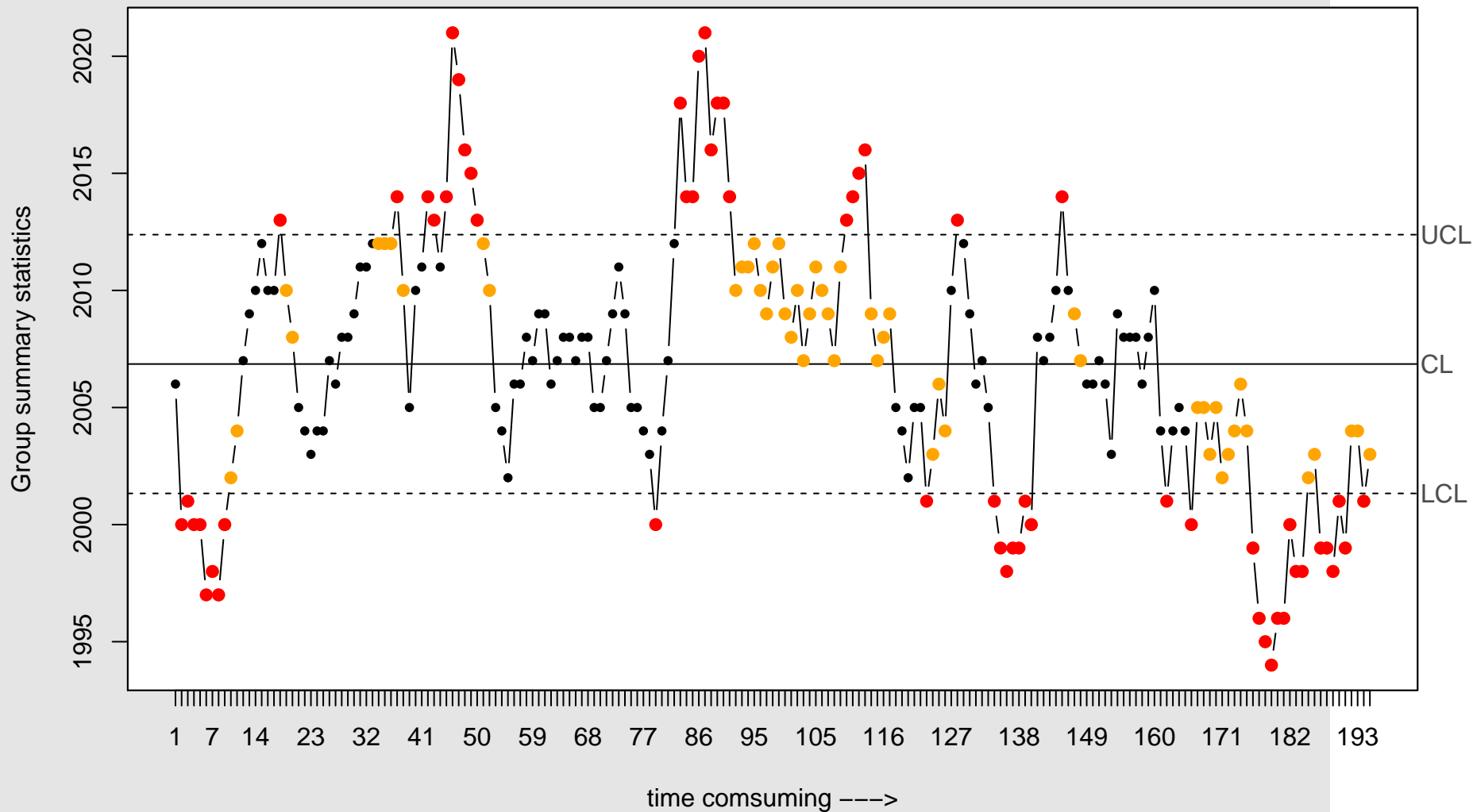
LCL = 1999.68

UCL = 2010.812

Number beyond limits = 57

Number violating runs = 84

# 40th column point of this product

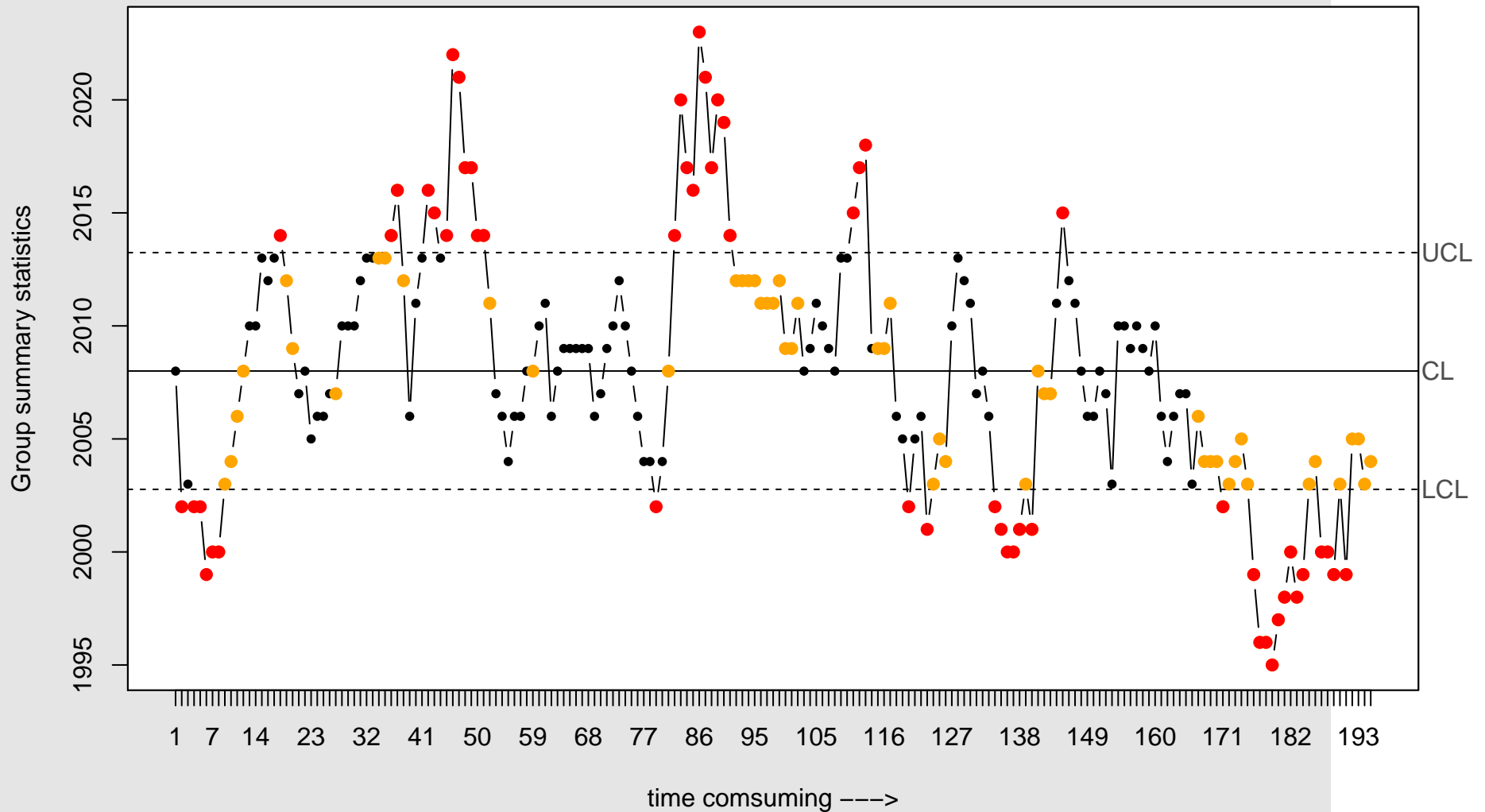


Number of groups = 195  
Center = 2006.856  
StdDev = 1.841595

LCL = 2001.332  
UCL = 2012.381

Number beyond limits = 59  
Number violating runs = 87

# 41th column point of this product



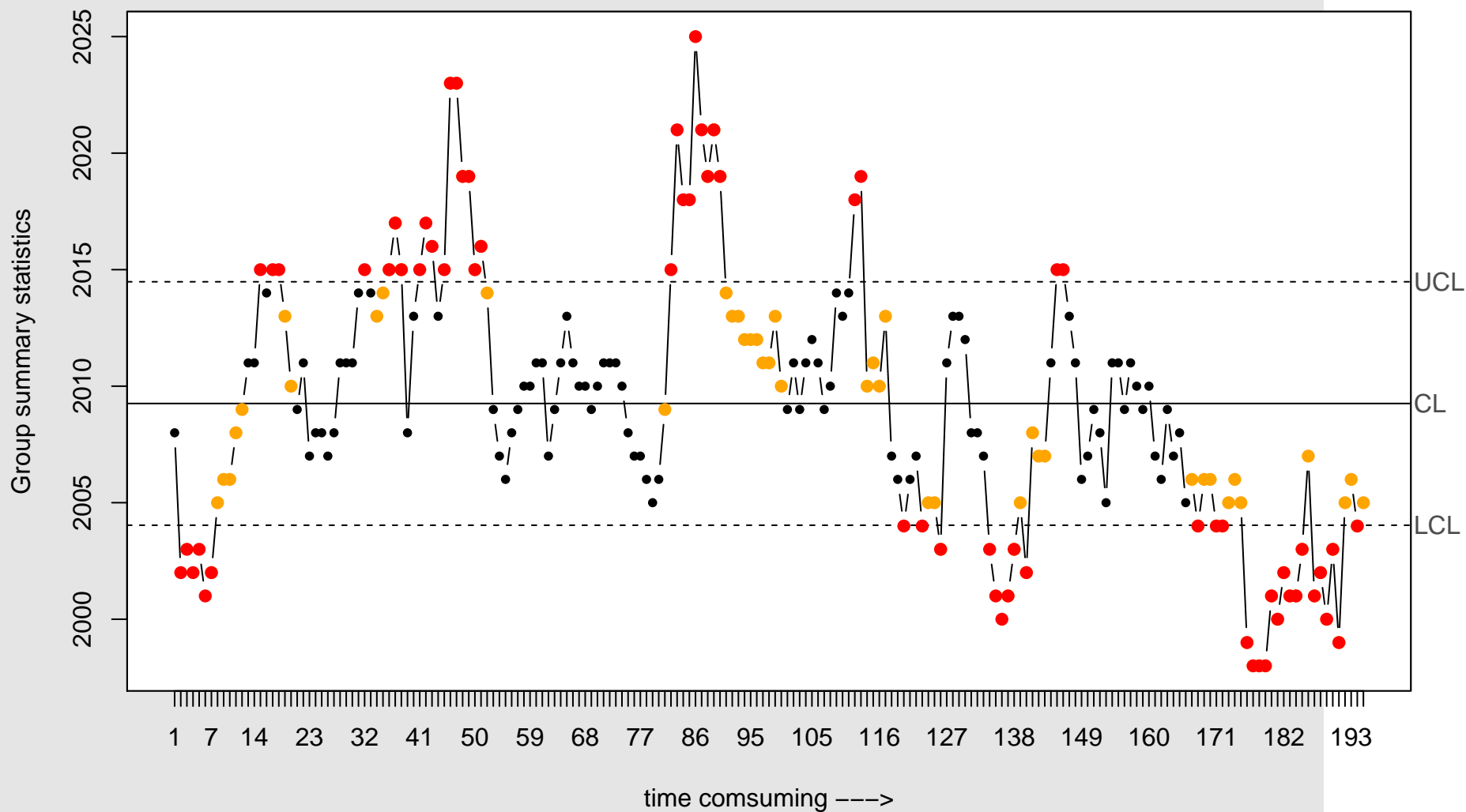
Number of groups = 195  
 Center = 2008.005  
 StdDev = 1.745631

LCL = 2002.768  
 UCL = 2013.242

Number beyond limits = 55  
 Number violating runs = 80



# 42th column point of this product

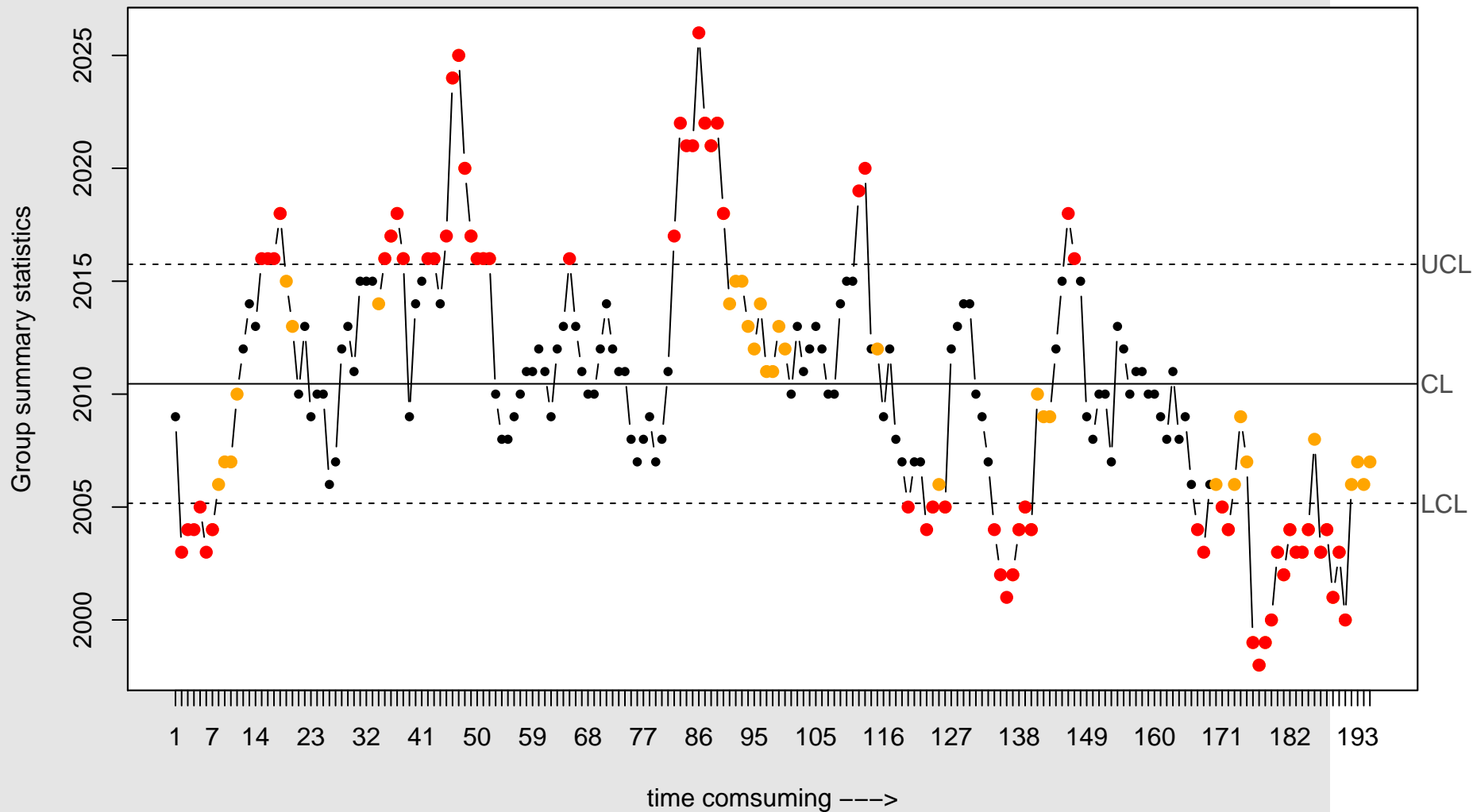


Number of groups = 195  
Center = 2009.256  
StdDev = 1.741062

LCL = 2004.033  
UCL = 2014.48

Number beyond limits = 64  
Number violating runs = 77

### 43th column point of this product

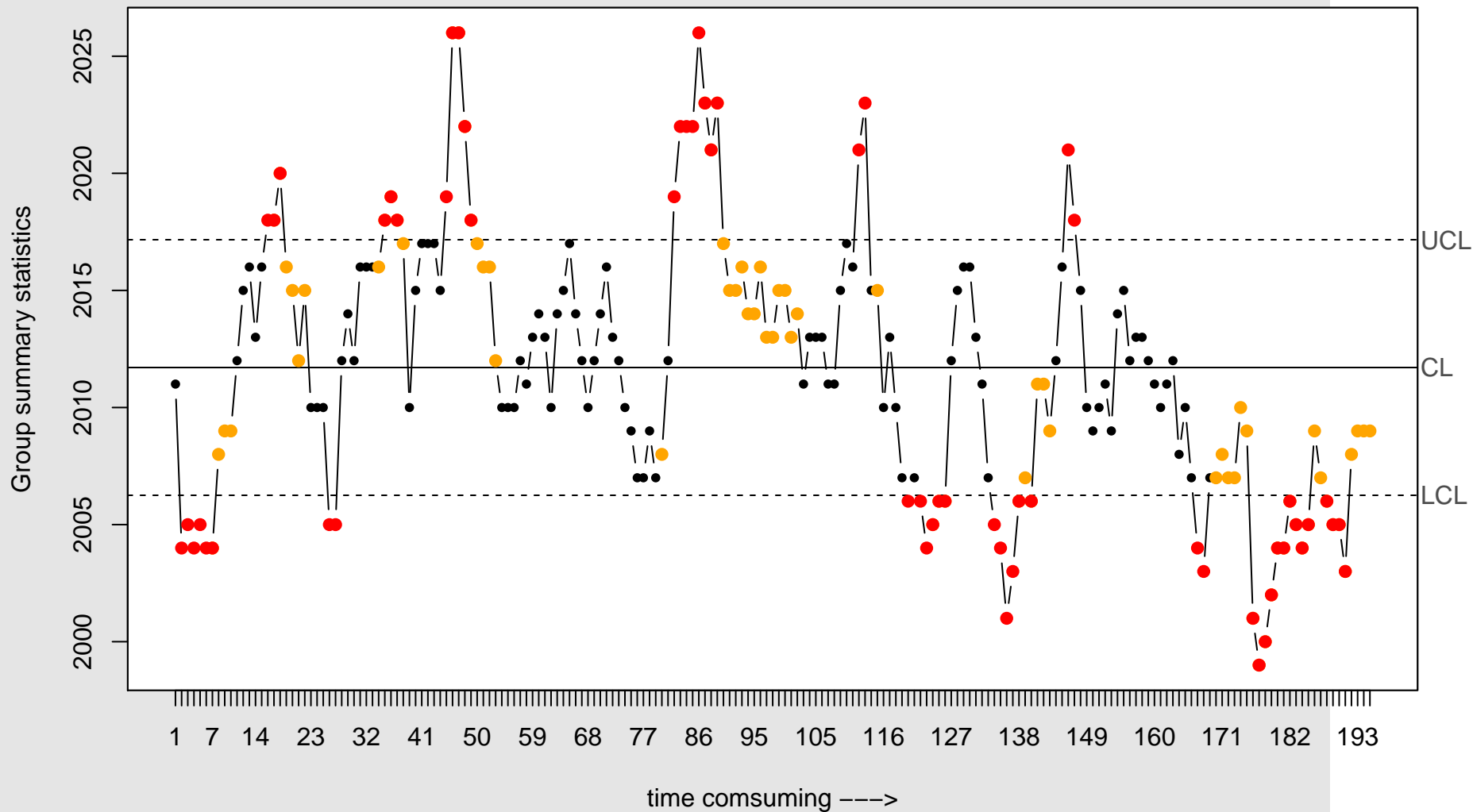


Number of groups = 195  
 Center = 2010.456  
 StdDev = 1.76391

LCL = 2005.165  
 UCL = 2015.748

Number beyond limits = 68  
 Number violating runs = 71

# 44th column point of this product



Number of groups = 195

Center = 2011.708

StdDev = 1.818747

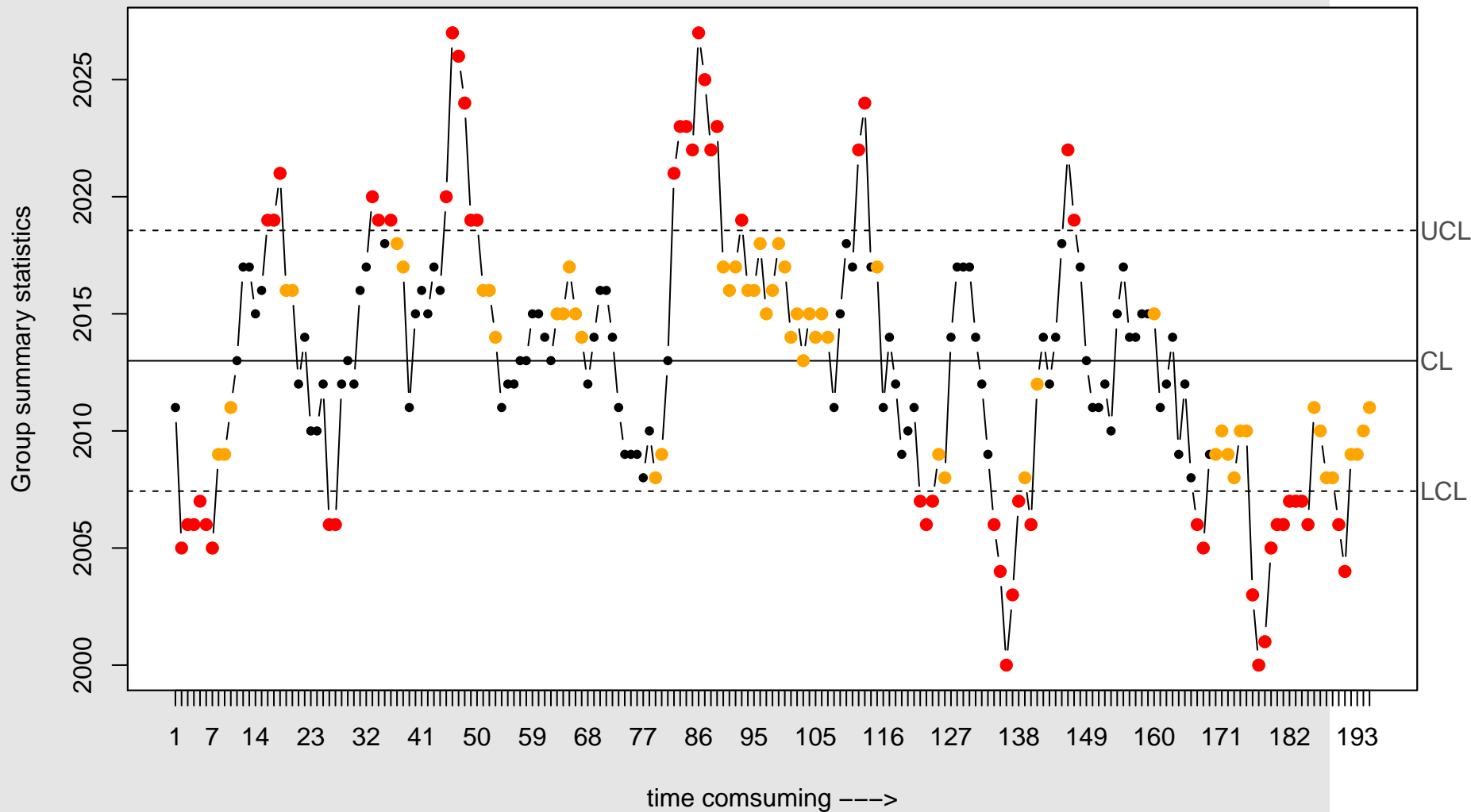
LCL = 2006.251

UCL = 2017.164

Number beyond limits = 59

Number violating runs = 76

# 45th column point of this product

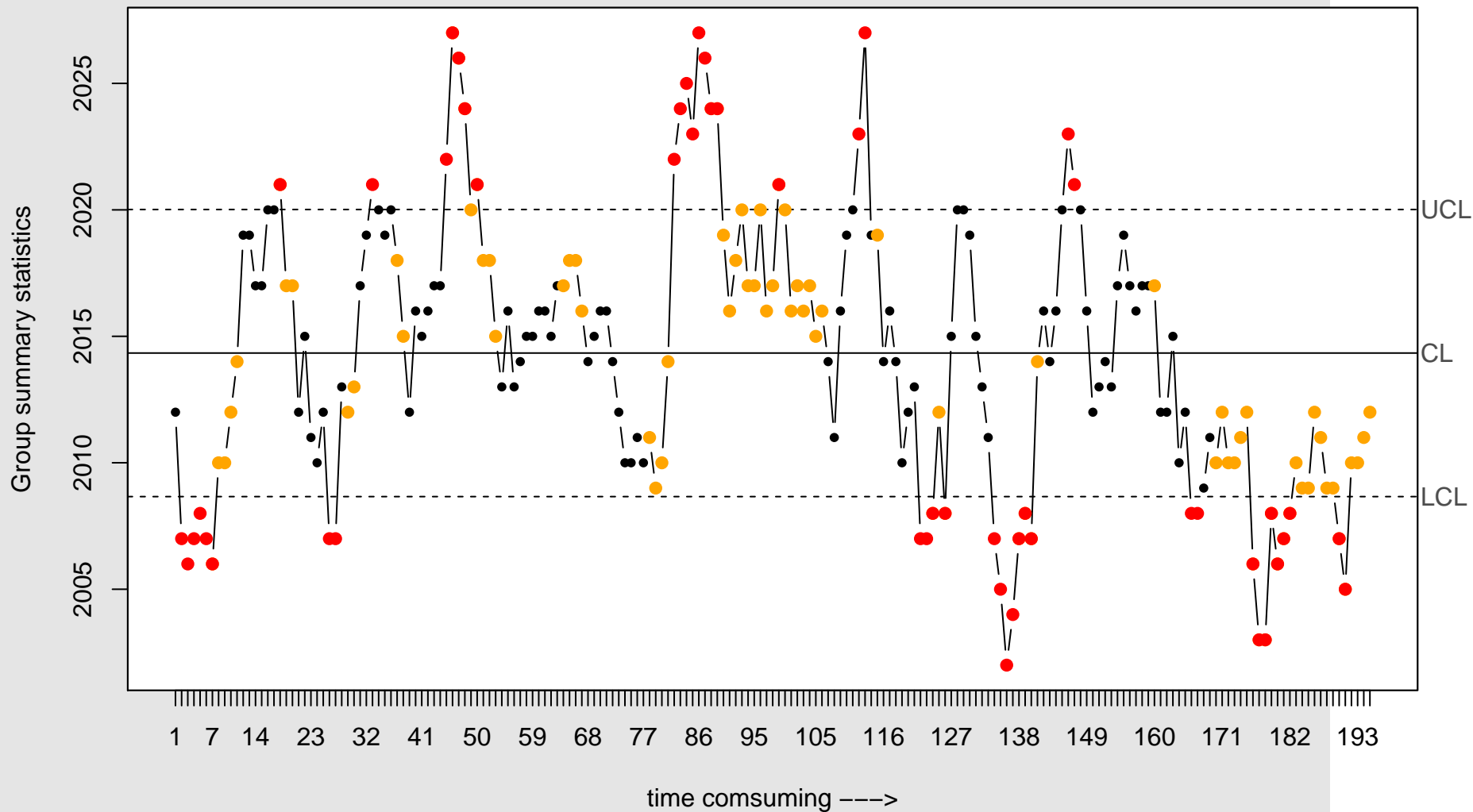


Number of groups = 195  
Center = 2012.995  
StdDev = 1.855305

LCL = 2007.429  
UCL = 2018.561

Number beyond limits = 56  
Number violating runs = 81

# 46th column point of this product

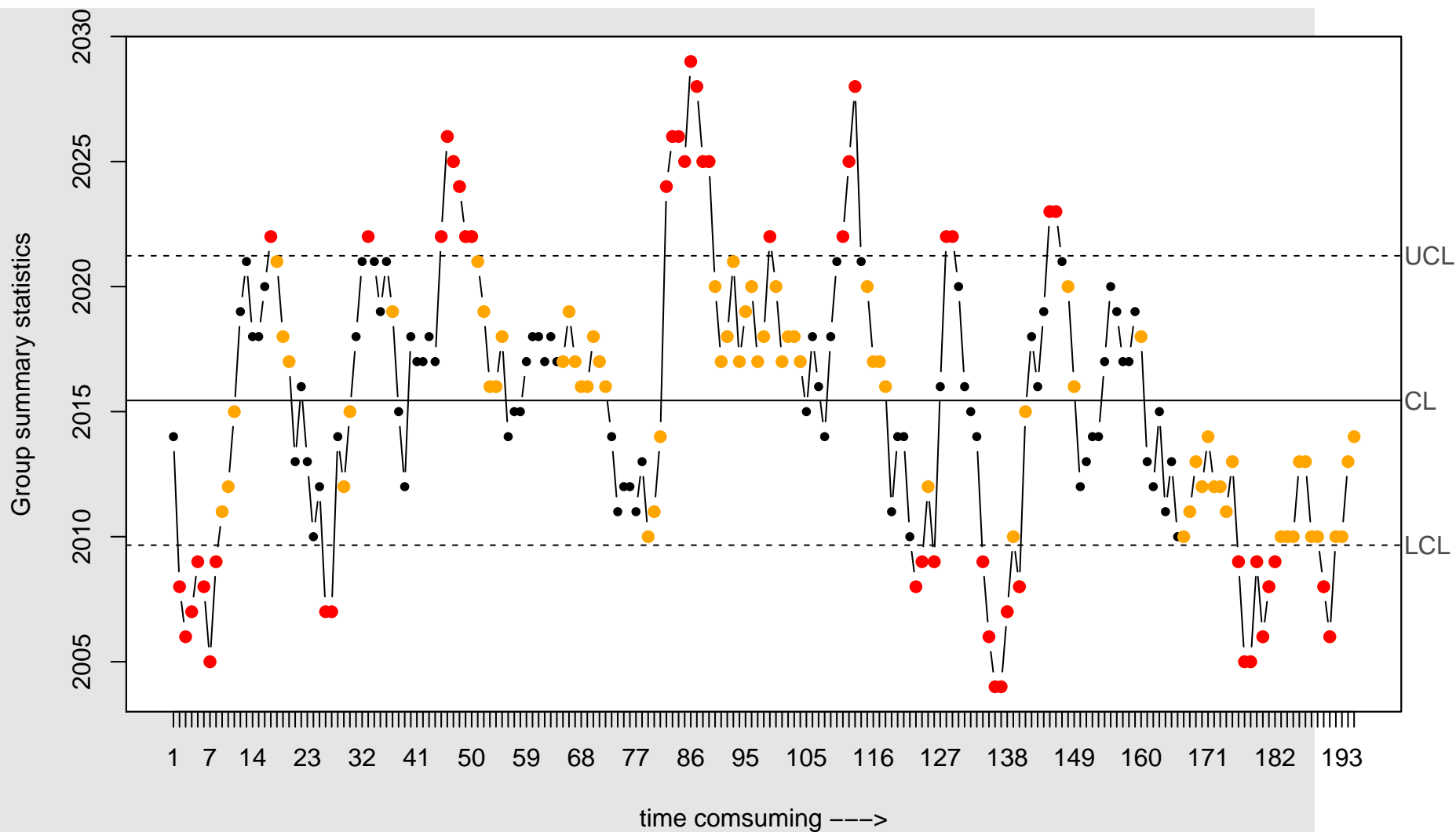


Number of groups = 195  
Center = 2014.338  
StdDev = 1.891862

LCL = 2008.663  
UCL = 2020.014

Number beyond limits = 50  
Number violating runs = 82

# 47th column point of this product

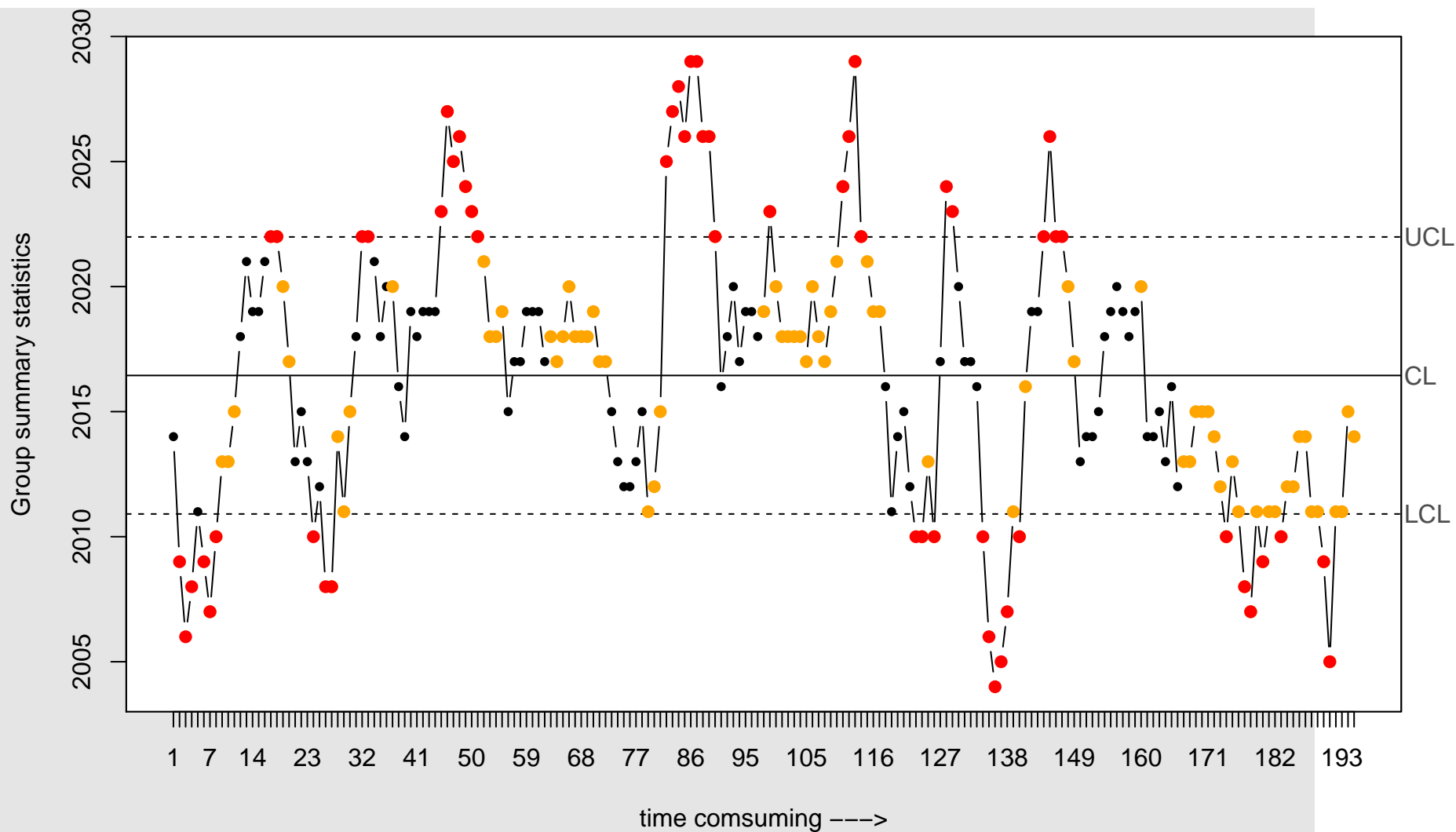


Number of groups = 195  
Center = 2015.446  
StdDev = 1.92842

LCL = 2009.661  
UCL = 2021.231

Number beyond limits = 51  
Number violating runs = 91

# 48th column point of this product

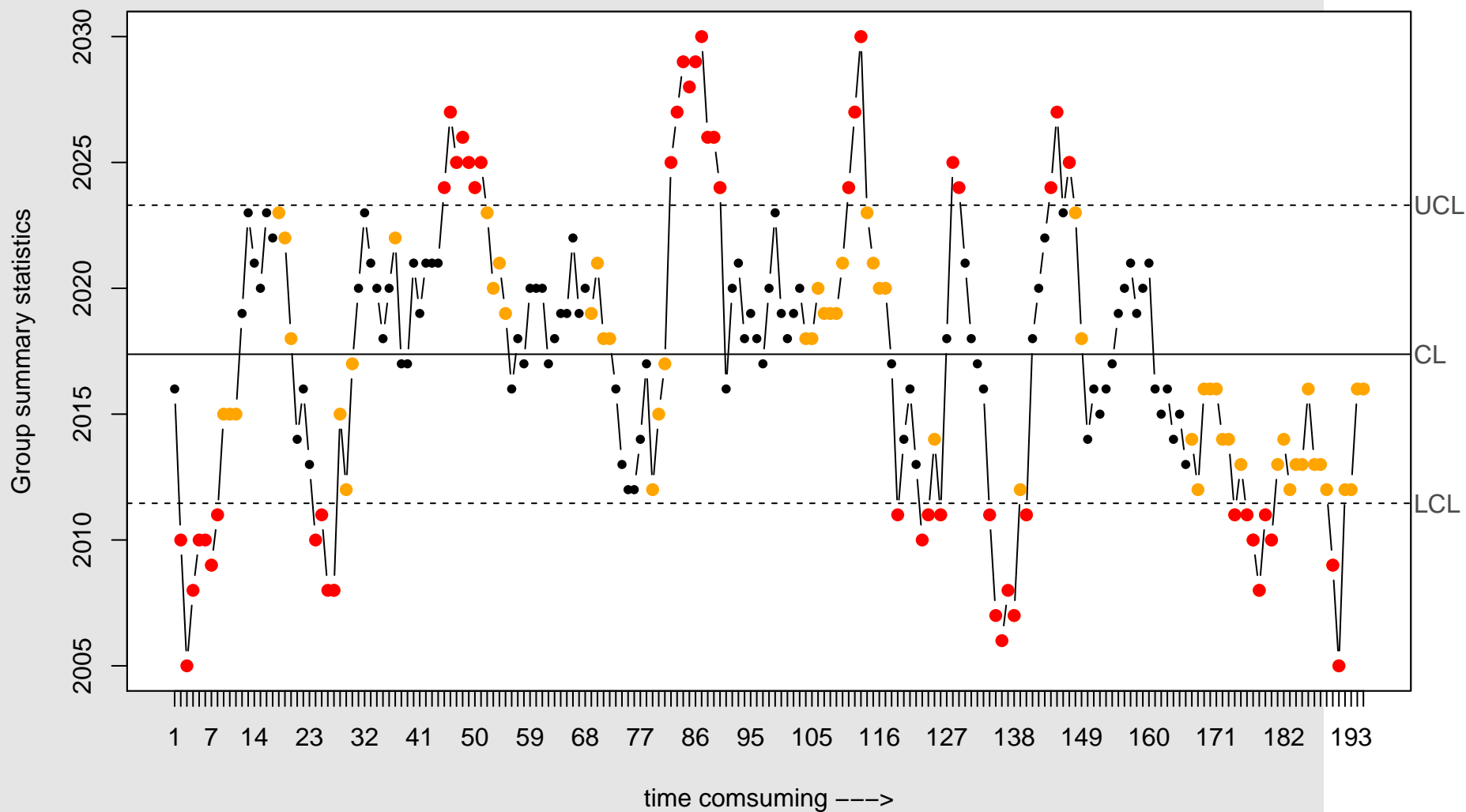


Number of groups = 195  
Center = 2016.446  
StdDev = 1.846165

LCL = 2010.908  
UCL = 2021.985

Number beyond limits = 56  
Number violating runs = 97

# 49th column point of this product



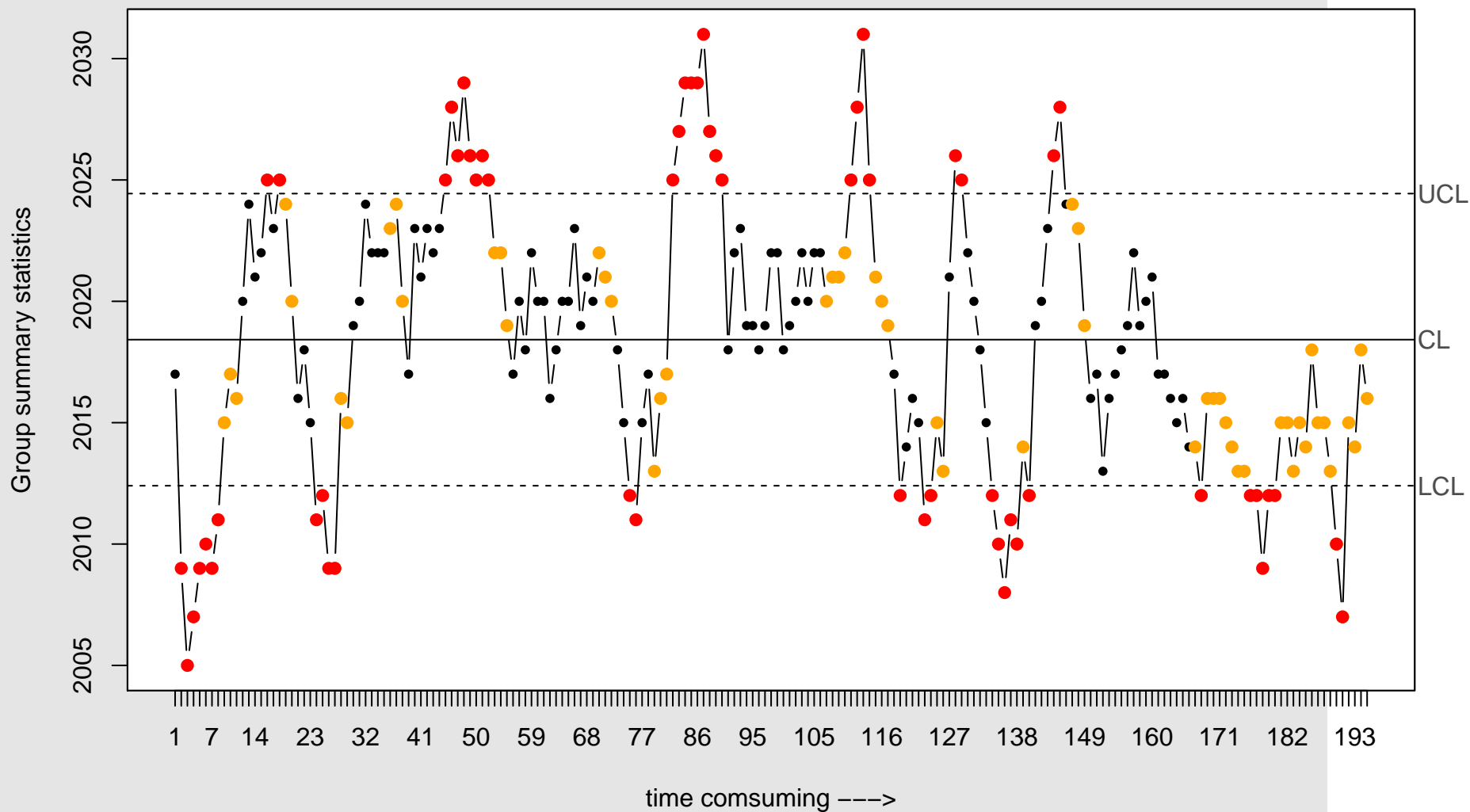
Number of groups = 195  
Center = 2017.379  
StdDev = 1.974117

LCL = 2011.457  
UCL = 2023.302

Number beyond limits = 53  
Number violating runs = 85



# 50th column point of this product

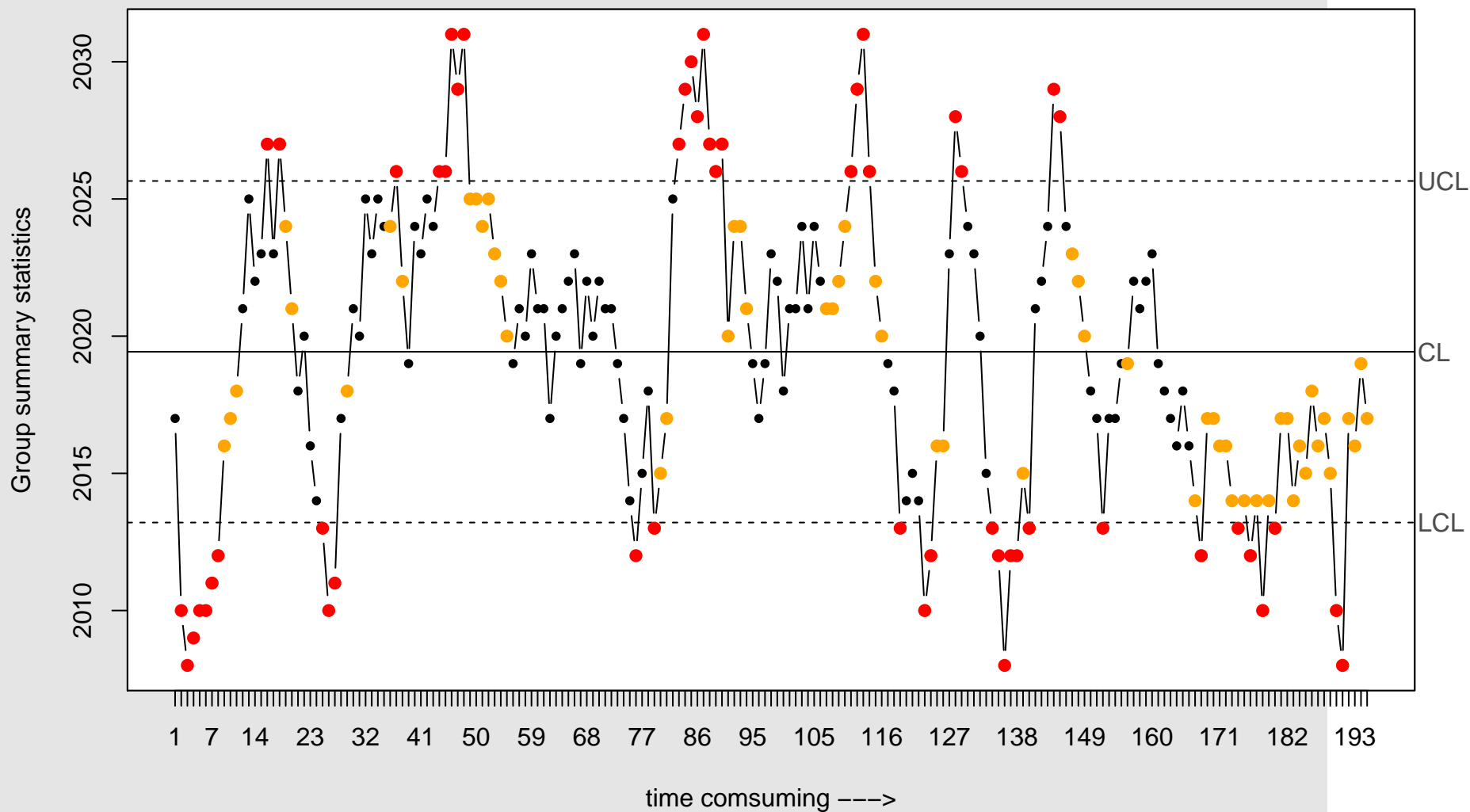


Number of groups = 195  
Center = 2018.421  
StdDev = 2.006105

LCL = 2012.402  
UCL = 2024.439

Number beyond limits = 57  
Number violating runs = 82

# 51th column point of this product

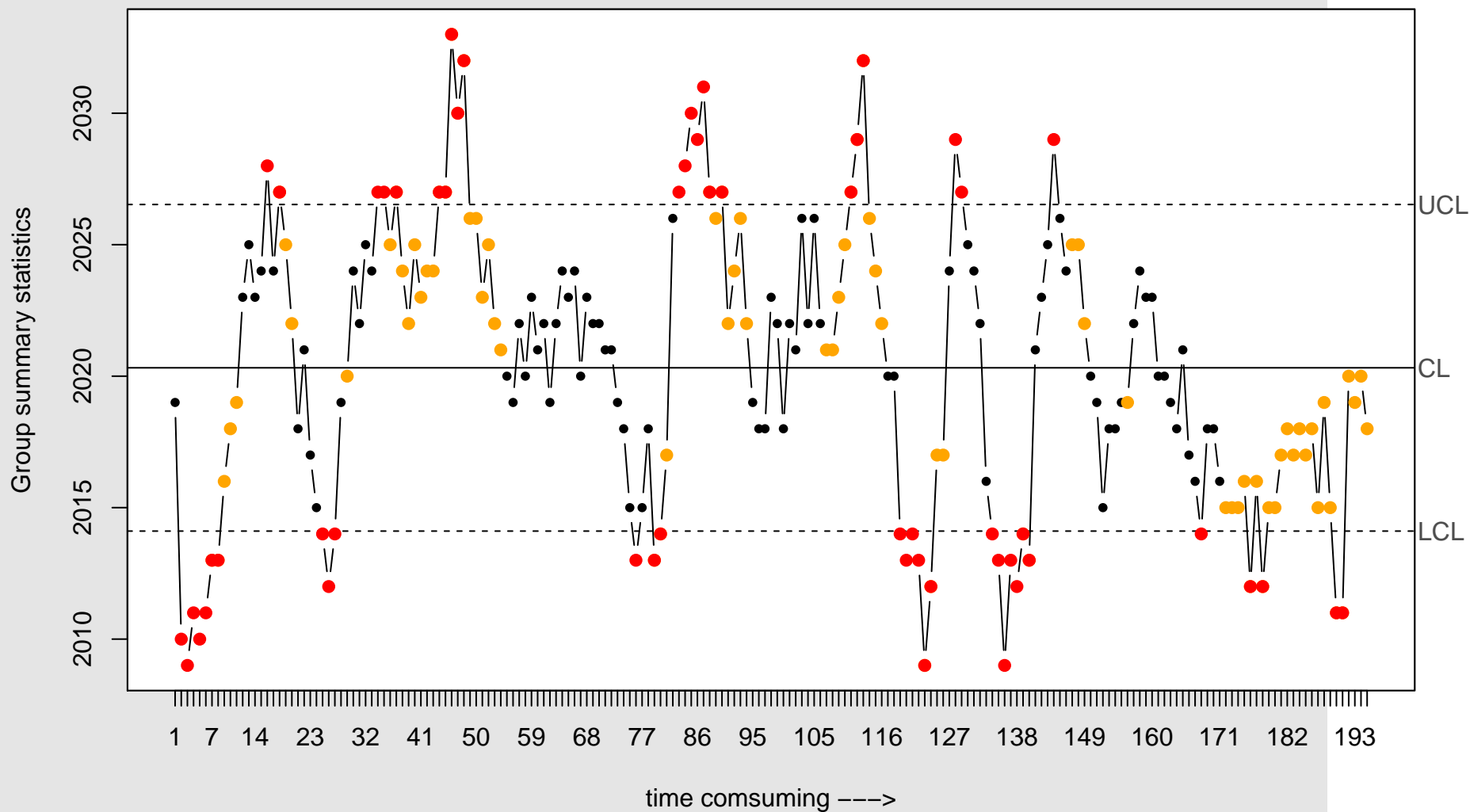


Number of groups = 195  
Center = 2019.431  
StdDev = 2.074651

LCL = 2013.207  
UCL = 2025.655

Number beyond limits = 53  
Number violating runs = 81

## 52th column point of this product

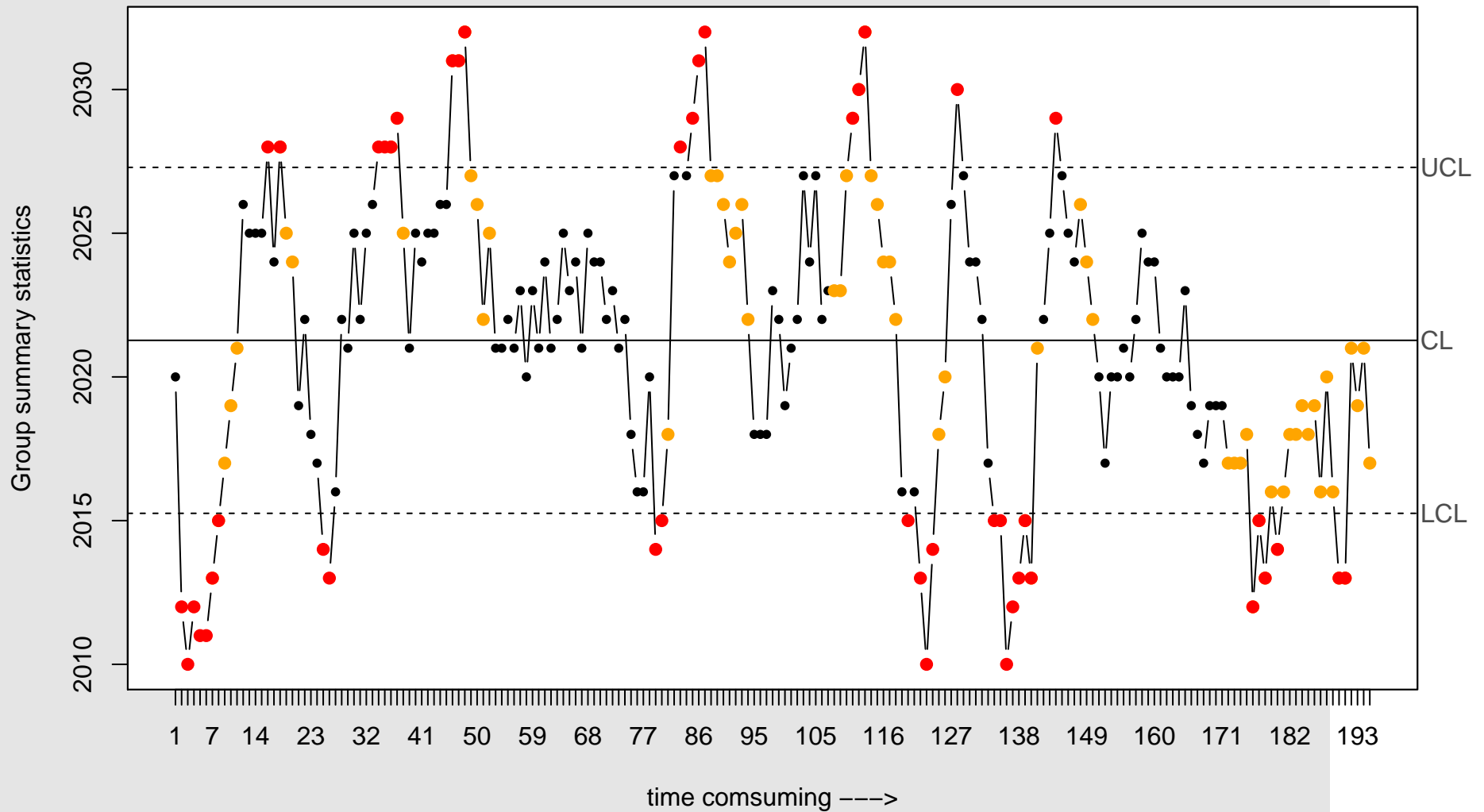


Number of groups = 195  
Center = 2020.318  
StdDev = 2.070081

LCL = 2014.108  
UCL = 2026.528

Number beyond limits = 54  
Number violating runs = 82

### 53th column point of this product

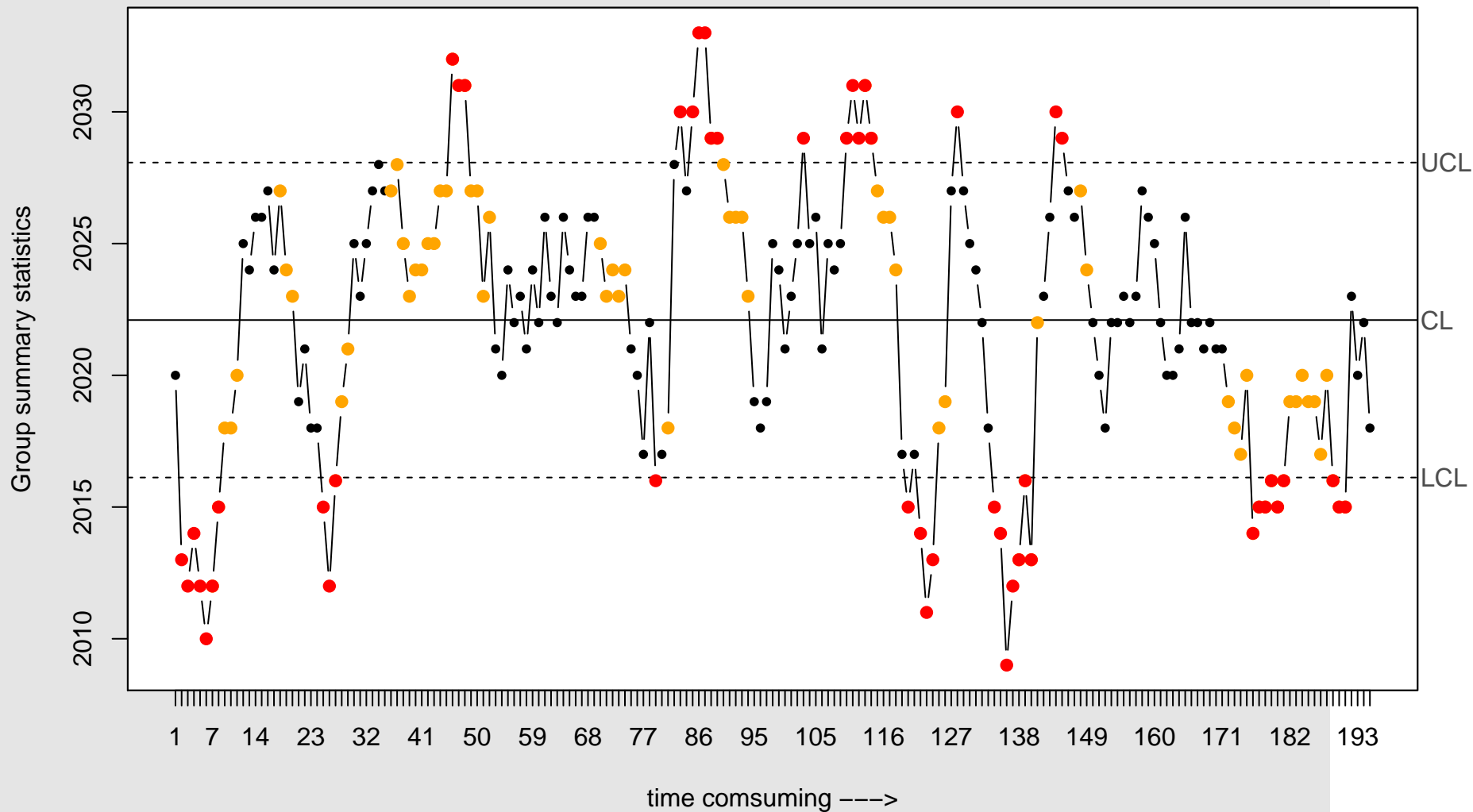


Number of groups = 195  
 Center = 2021.272  
 StdDev = 2.006105

LCL = 2015.253  
 UCL = 2027.29

Number beyond limits = 46  
 Number violating runs = 69

# 54th column point of this product

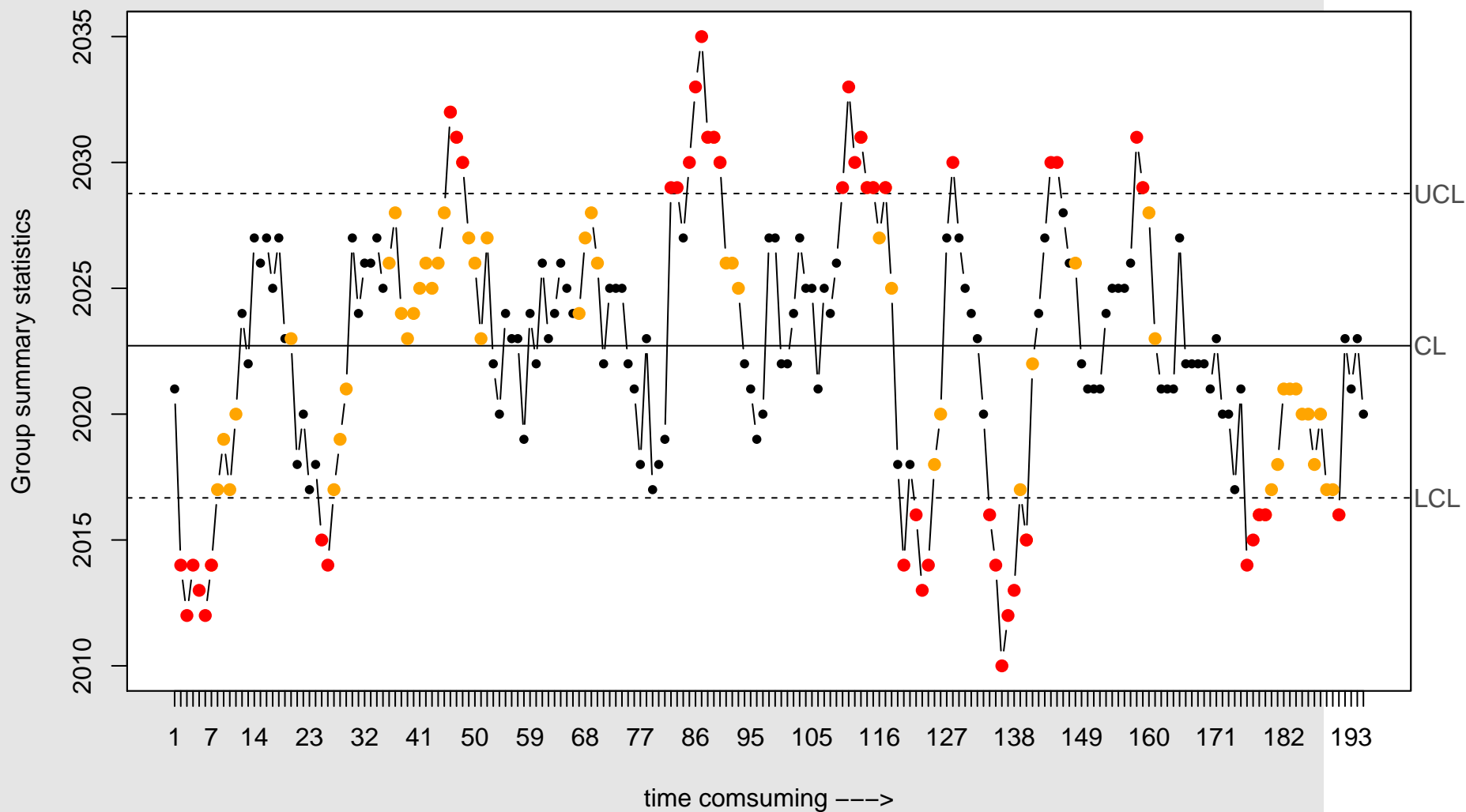


Number of groups = 195  
 Center = 2022.097  
 StdDev = 1.992396

LCL = 2016.12  
 UCL = 2028.075

Number beyond limits = 49  
 Number violating runs = 75

# 55th column point of this product

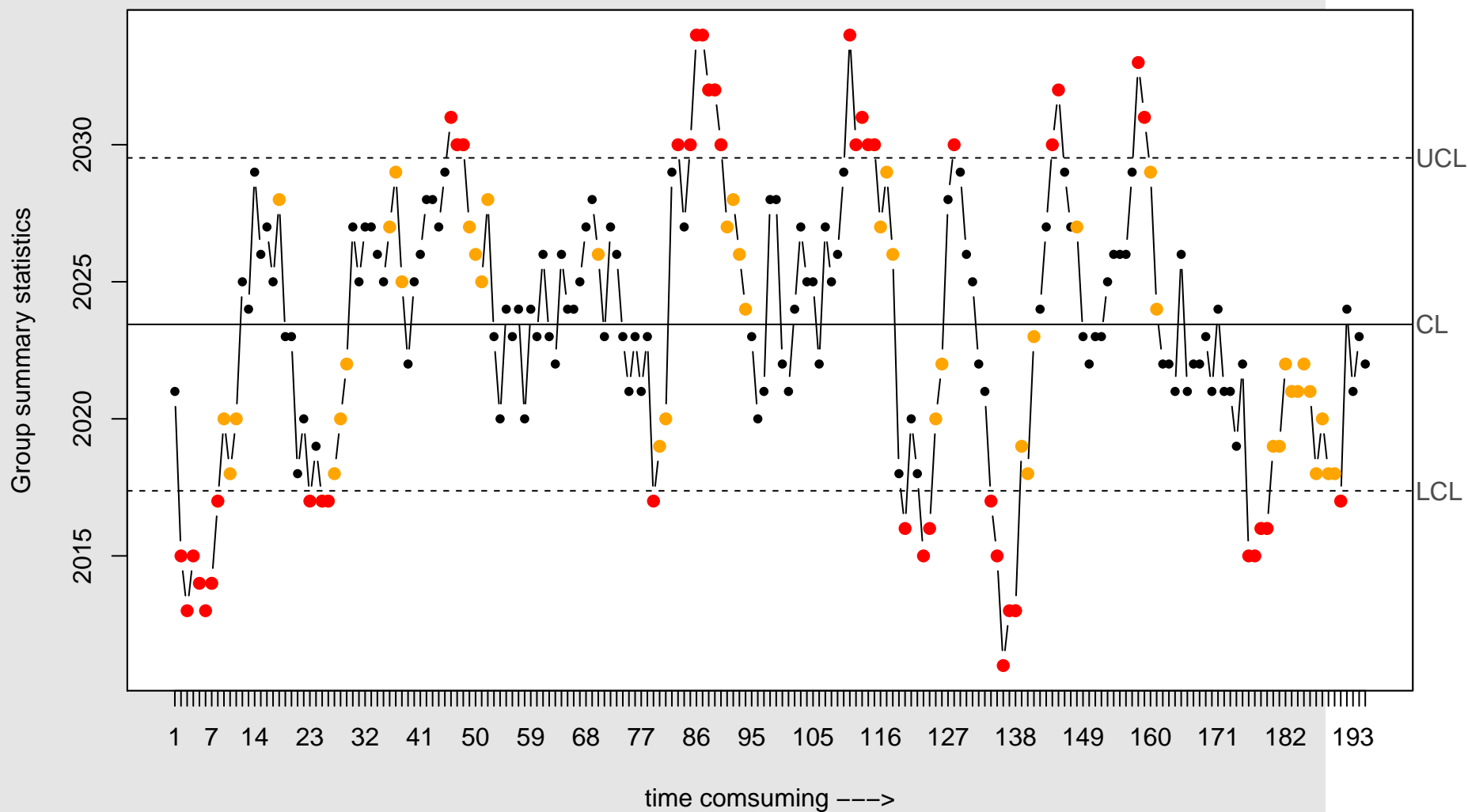


Number of groups = 195  
Center = 2022.718  
StdDev = 2.015245

LCL = 2016.672  
UCL = 2028.764

Number beyond limits = 46  
Number violating runs = 65

# 56th column point of this product



Number of groups = 195

Center = 2023.446

StdDev = 2.024384

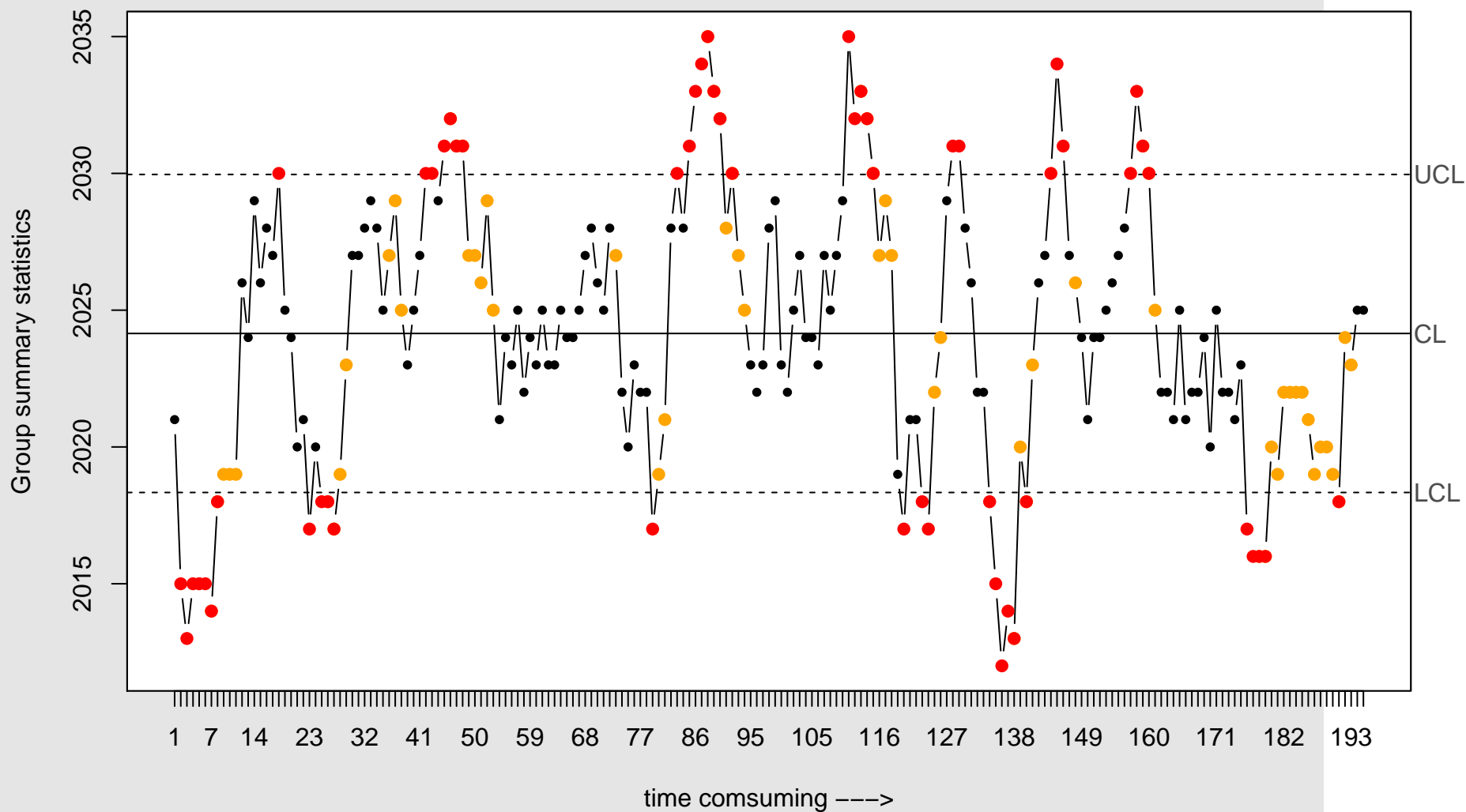
LCL = 2017.373

UCL = 2029.519

Number beyond limits = 44

Number violating runs = 61

# 57th column point of this product



Number of groups = 195

Center = 2024.149

StdDev = 1.937559

LCL = 2018.336

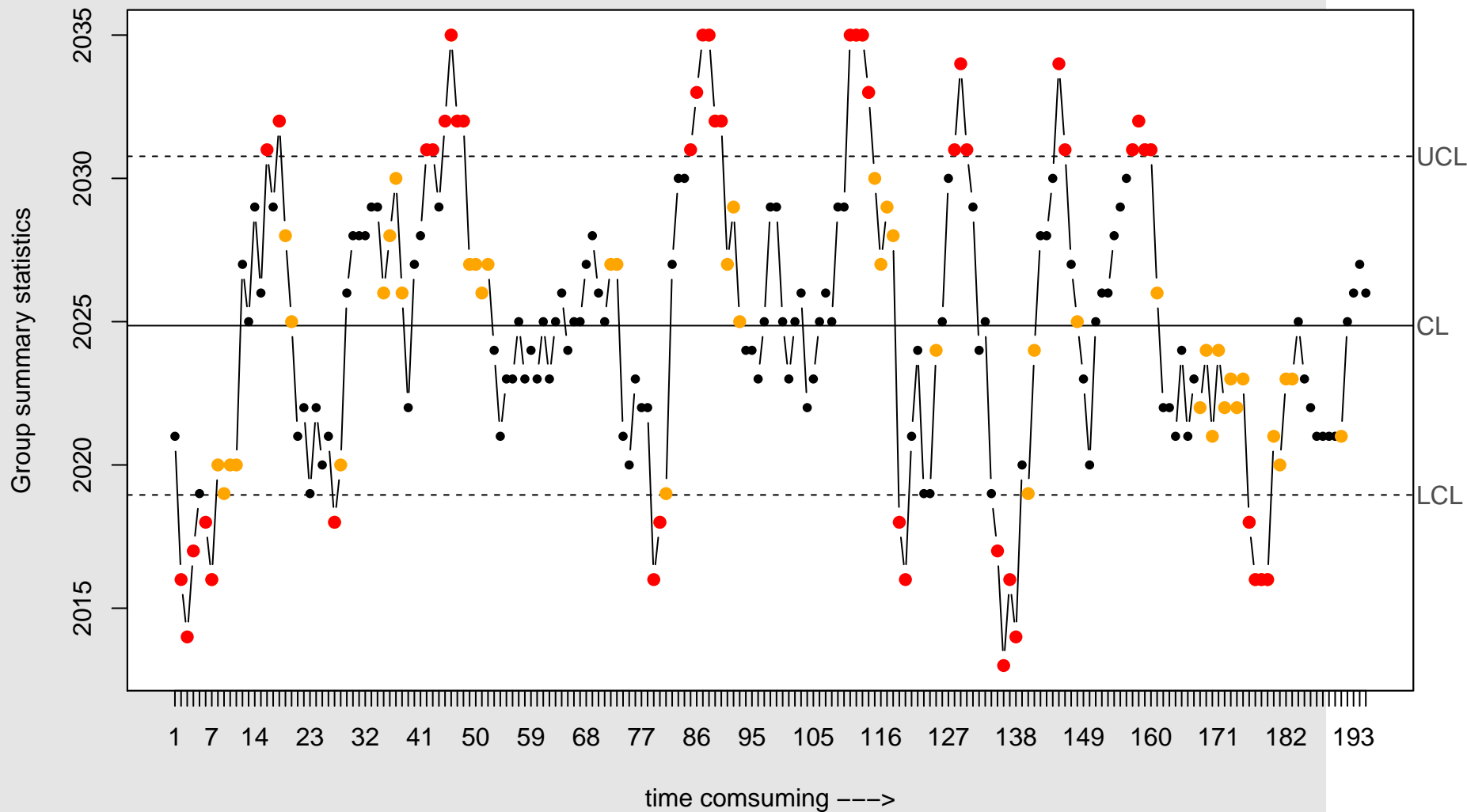
UCL = 2029.961

Number beyond limits = 55

Number violating runs = 62



# 58th column point of this product

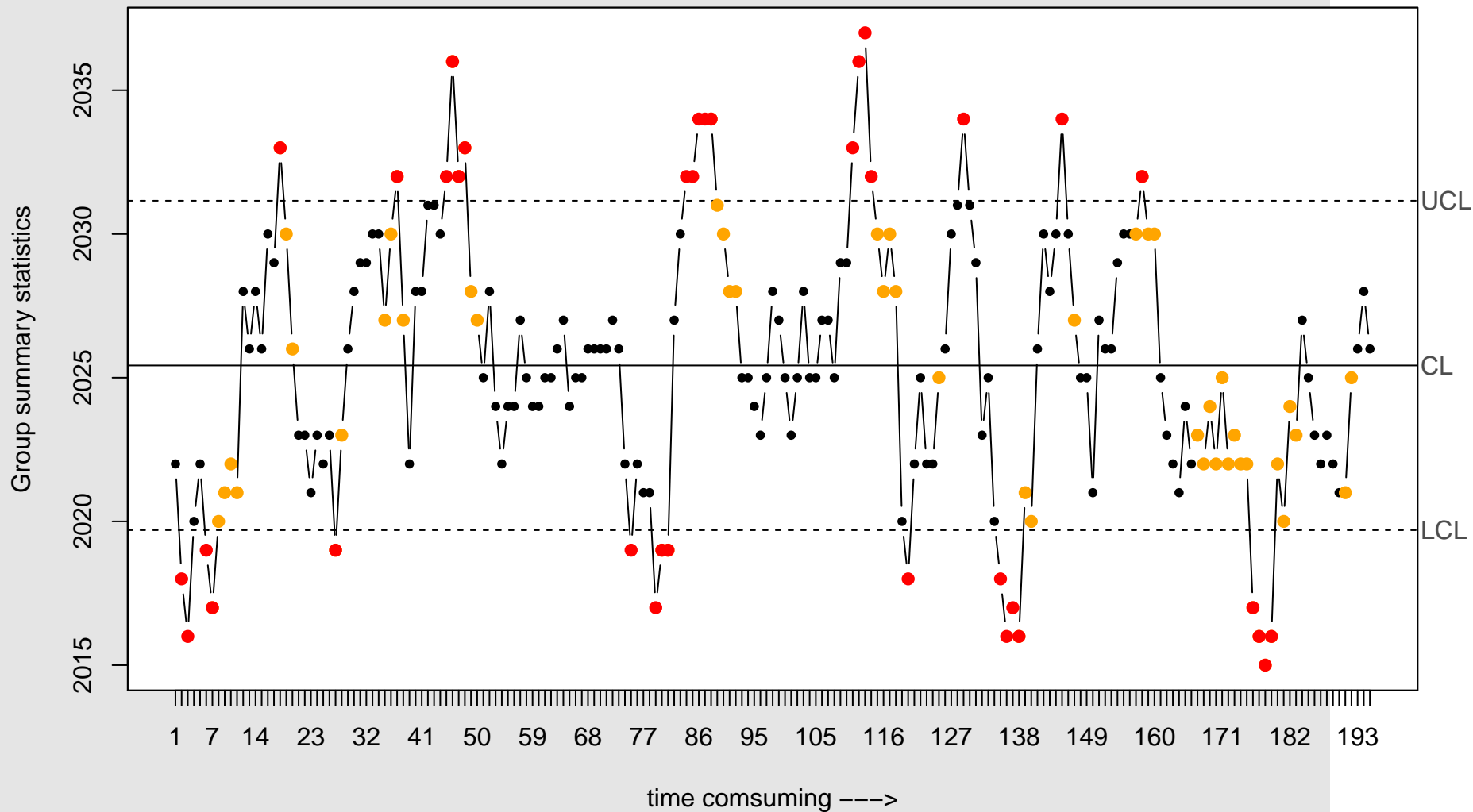


Number of groups = 195  
Center = 2024.862  
StdDev = 1.969547

LCL = 2018.953  
UCL = 2030.77

Number beyond limits = 45  
Number violating runs = 64

# 59th column point of this product

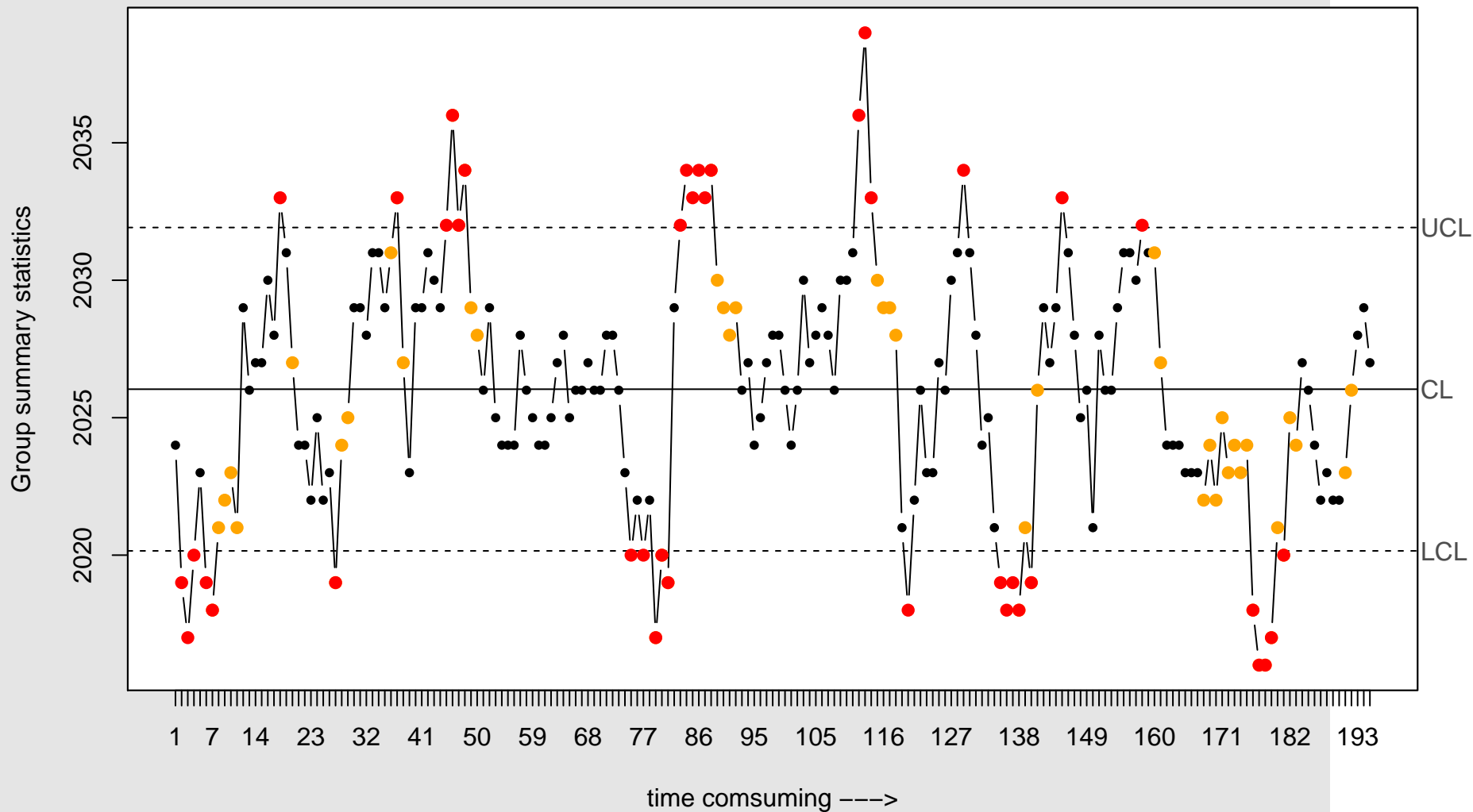


Number of groups = 195  
 Center = 2025.426  
 StdDev = 1.910141

LCL = 2019.695  
 UCL = 2031.156

Number beyond limits = 36  
 Number violating runs = 58

# 60th column point of this product



Number of groups = 195

Center = 2026.036

StdDev = 1.960408

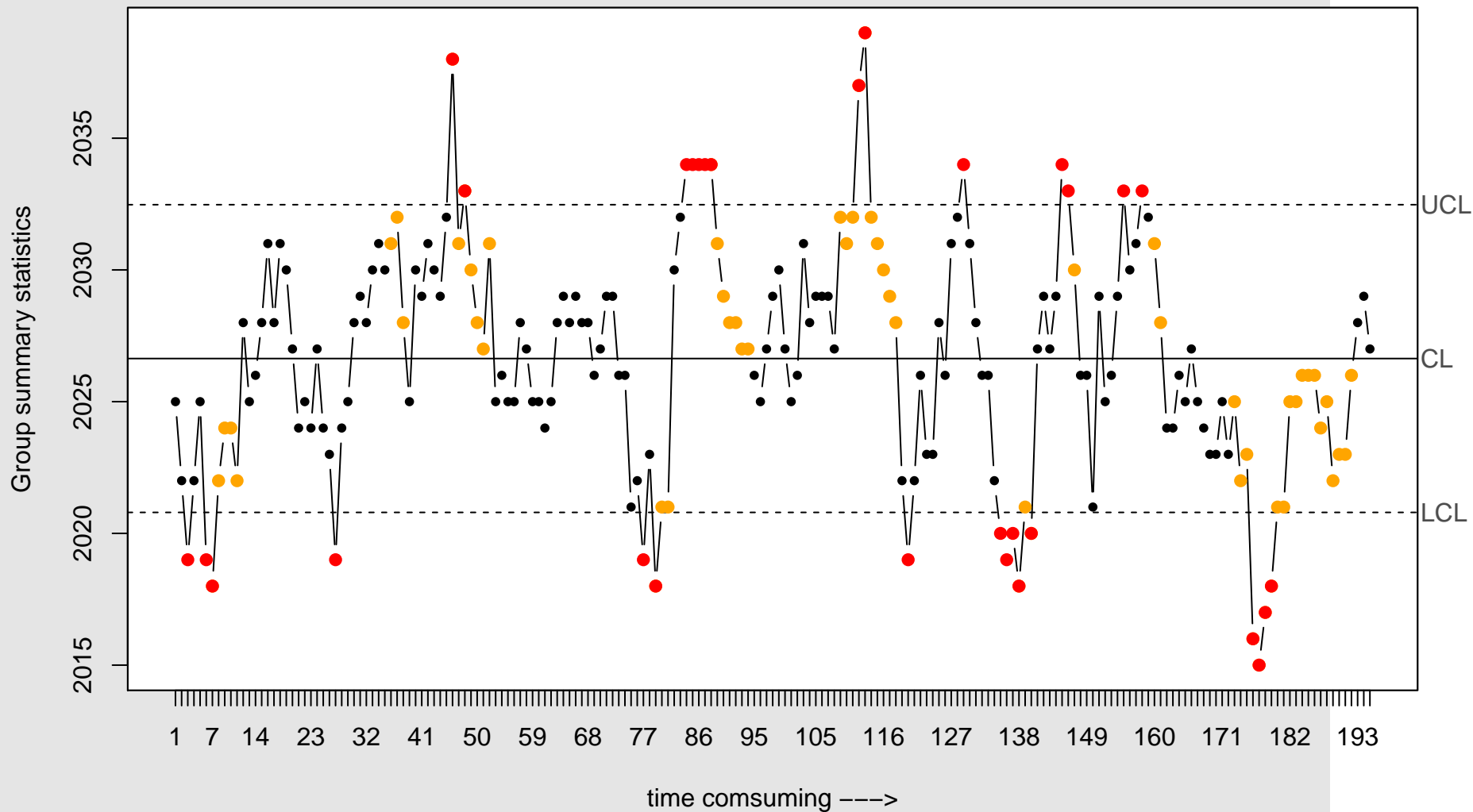
LCL = 2020.155

UCL = 2031.917

Number beyond limits = 40

Number violating runs = 53

# 61th column point of this product



Number of groups = 195

Center = 2026.636

StdDev = 1.946699

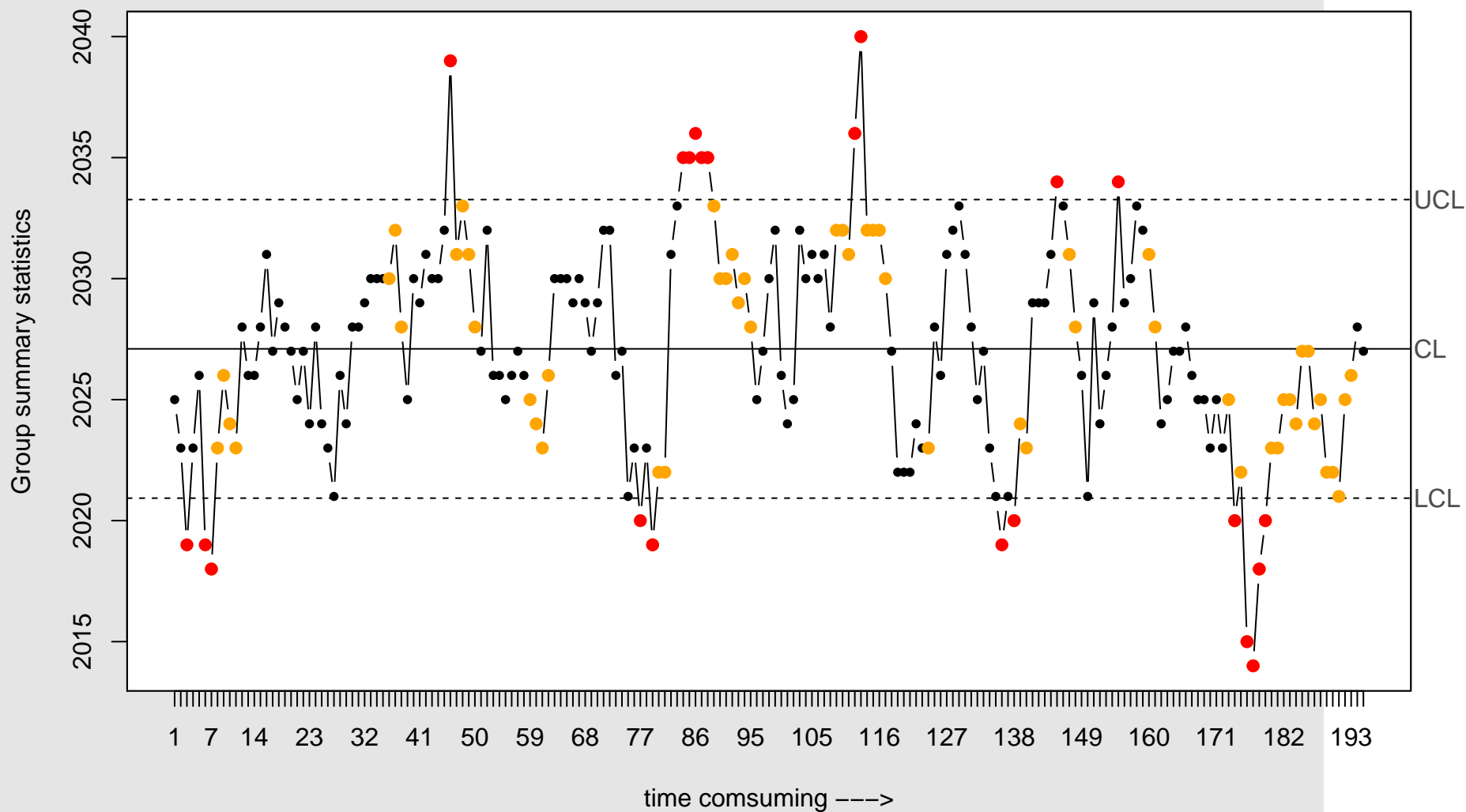
LCL = 2020.796

UCL = 2032.476

Number beyond limits = 30

Number violating runs = 61

## 62th column point of this product

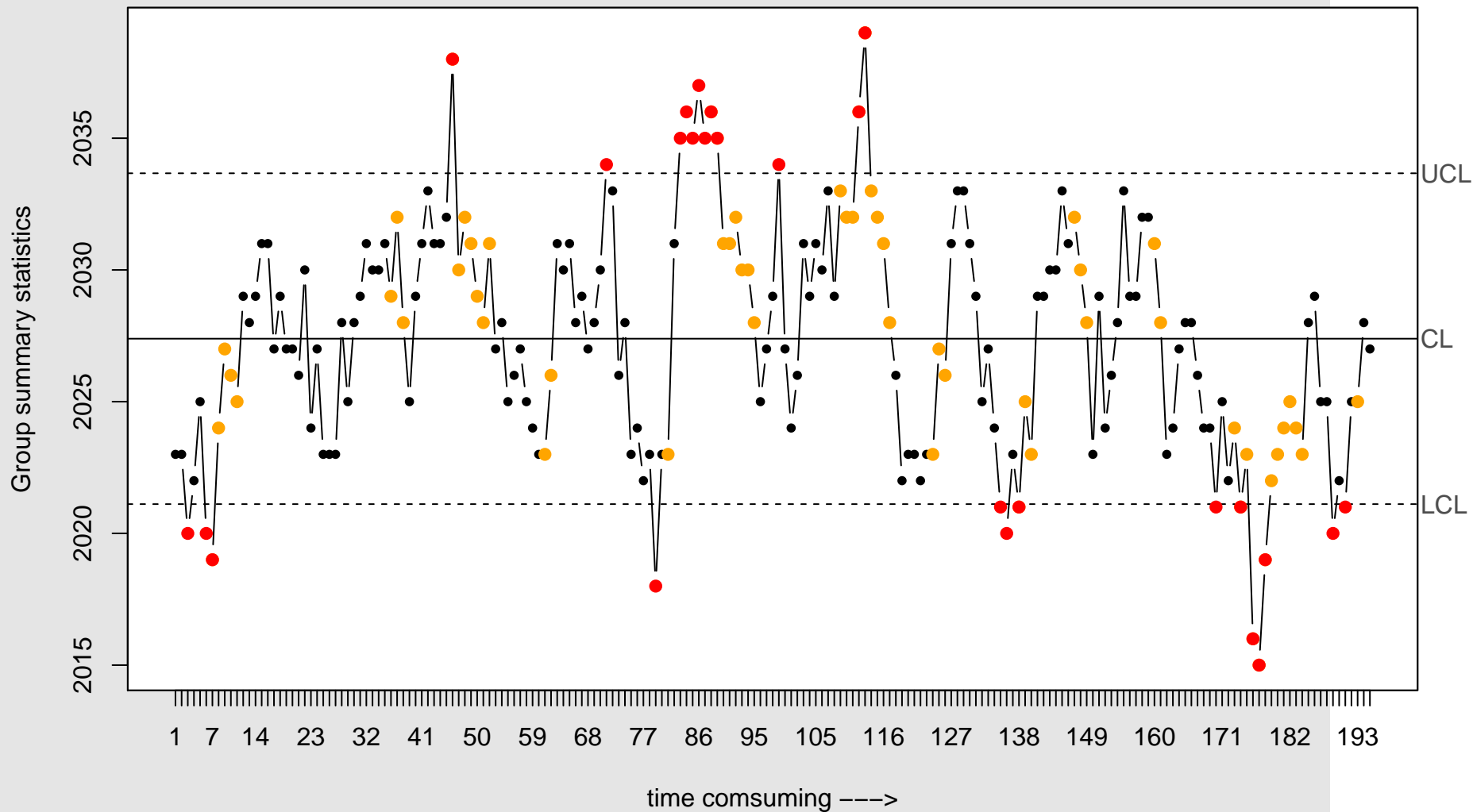


Number of groups = 195  
Center = 2027.097  
StdDev = 2.056372

LCL = 2020.928  
UCL = 2033.267

Number beyond limits = 22  
Number violating runs = 66

# 63th column point of this product



Number of groups = 195

Center = 2027.39

StdDev = 2.09293

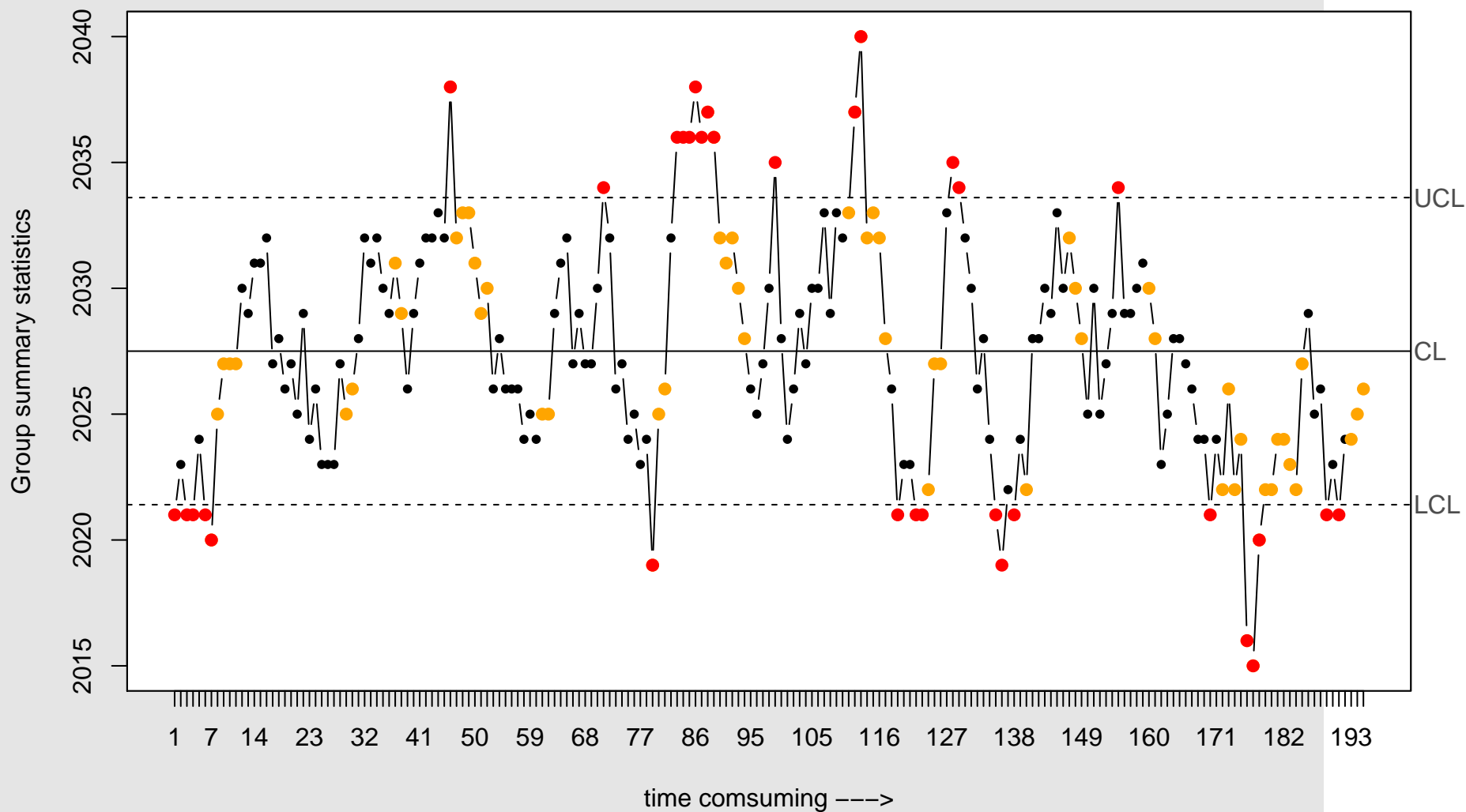
LCL = 2021.111

UCL = 2033.669

Number beyond limits = 26

Number violating runs = 59

# 64th column point of this product

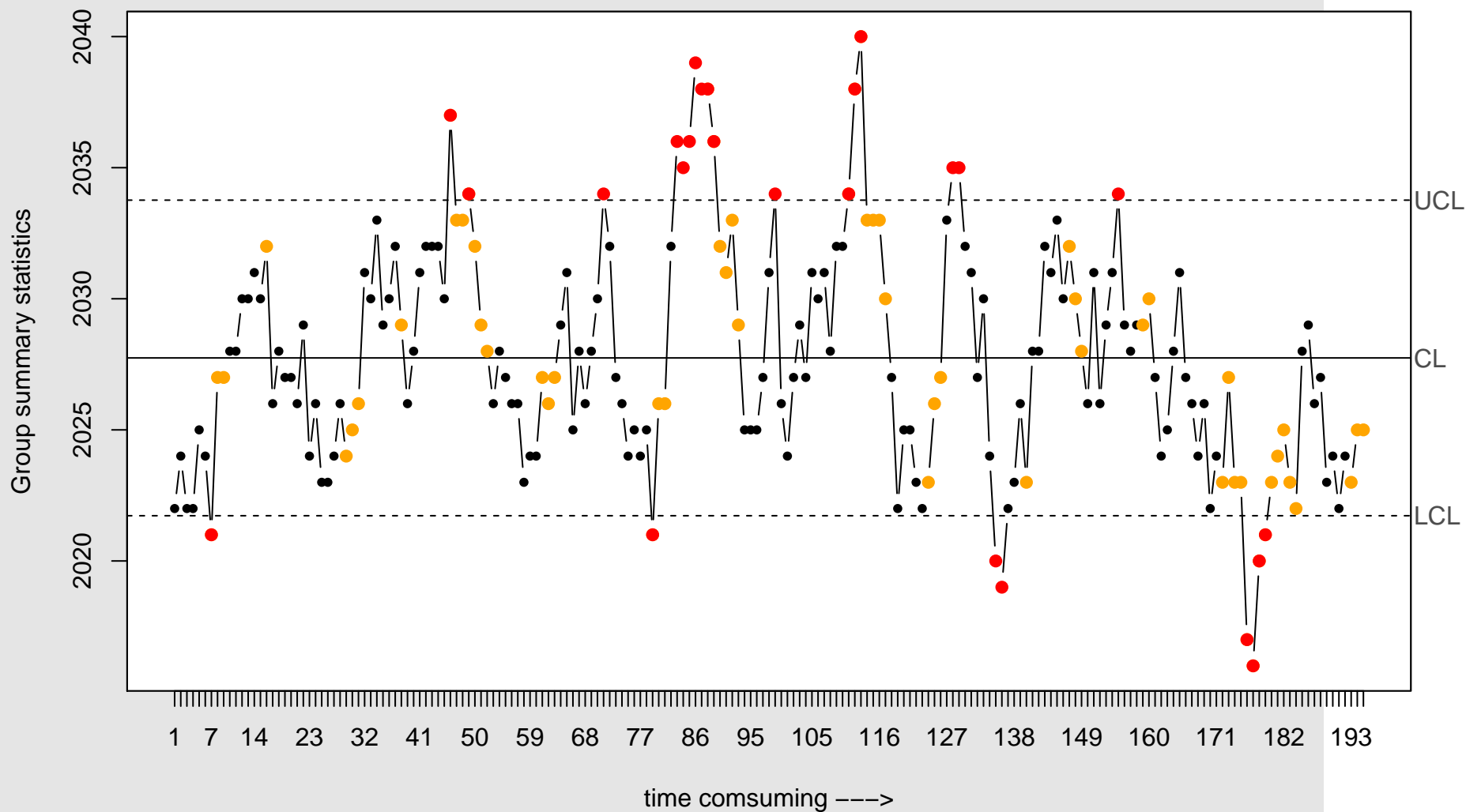


Number of groups = 195  
Center = 2027.503  
StdDev = 2.033523

LCL = 2021.402  
UCL = 2033.603

Number beyond limits = 33  
Number violating runs = 61

# 65th column point of this product



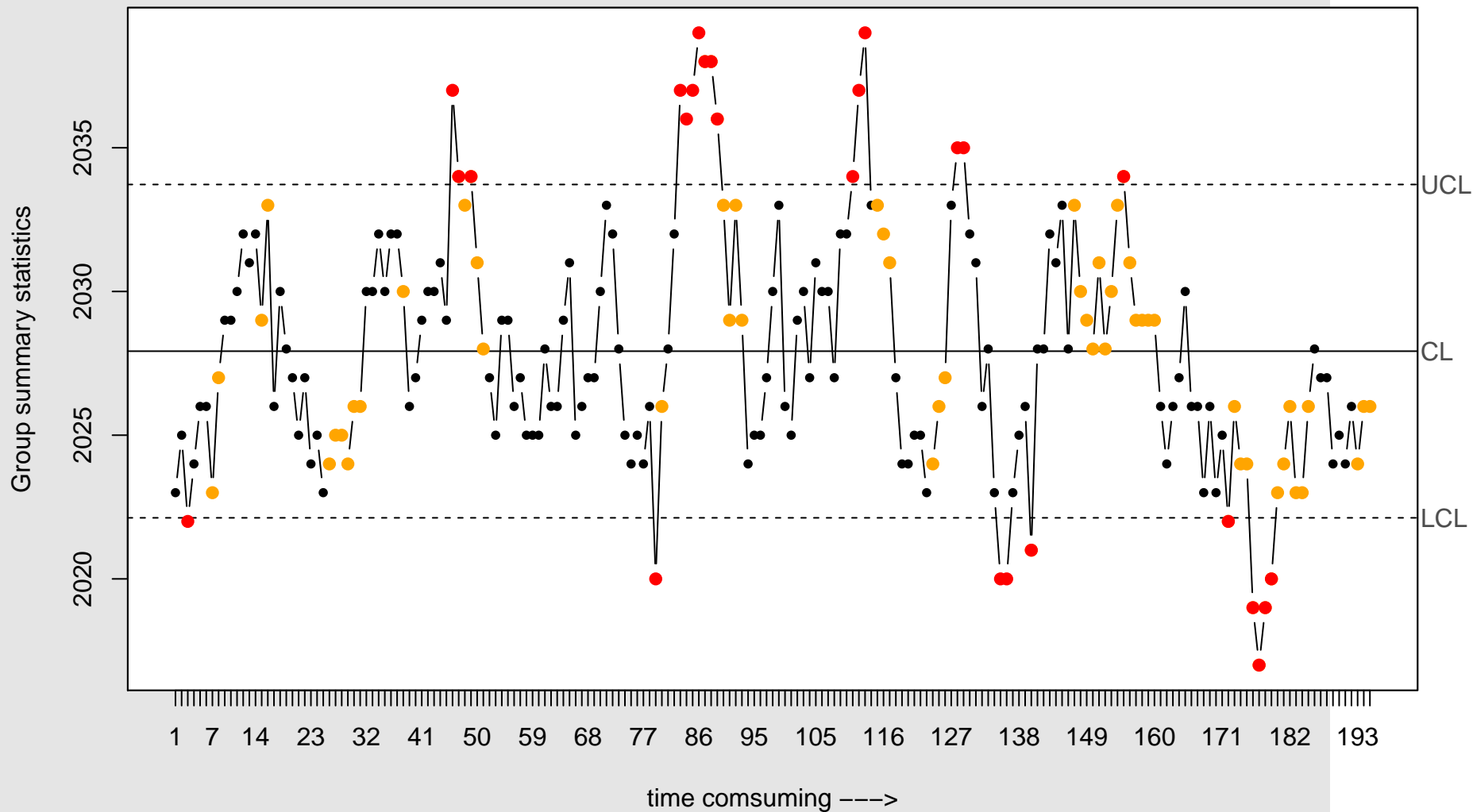
Number of groups = 195  
Center = 2027.744  
StdDev = 2.006105

LCL = 2021.725  
UCL = 2033.762

Number beyond limits = 25  
Number violating runs = 59



# 66th column point of this product



Number of groups = 195

Center = 2027.923

StdDev = 1.93299

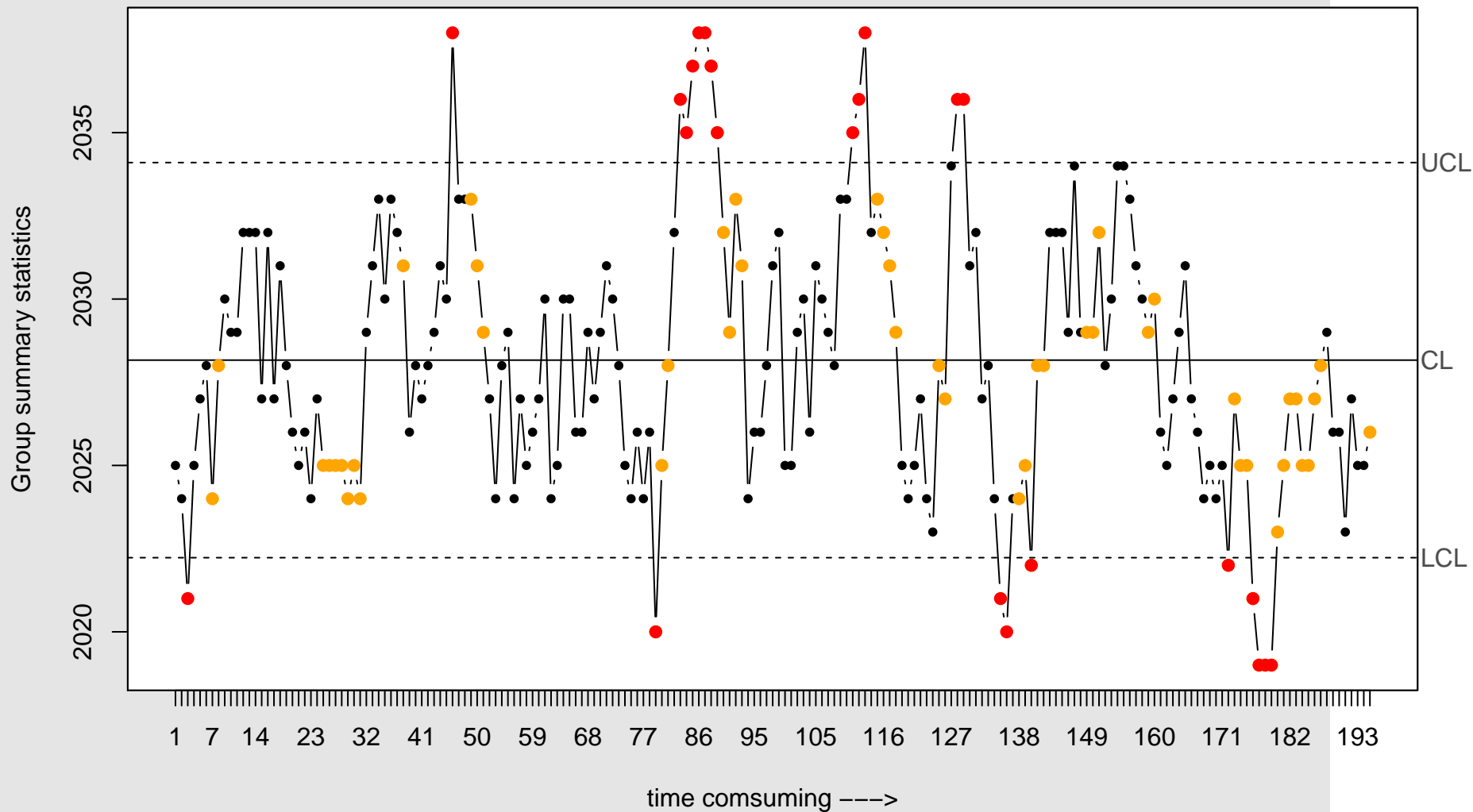
LCL = 2022.124

UCL = 2033.722

Number beyond limits = 26

Number violating runs = 62

# 67th column point of this product

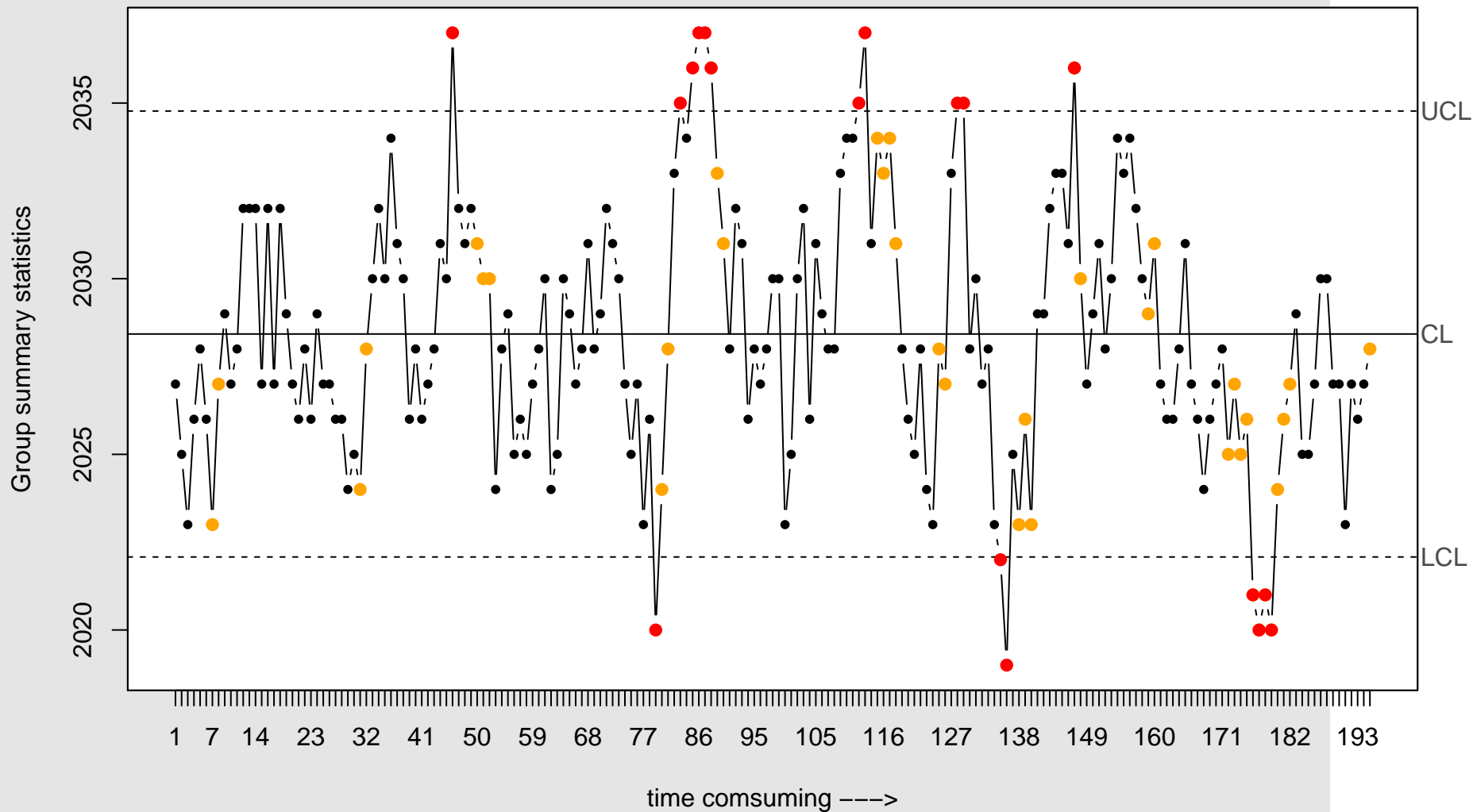


Number of groups = 195  
Center = 2028.164  
StdDev = 1.978687

LCL = 2022.228  
UCL = 2034.1

Number beyond limits = 23  
Number violating runs = 55

# 68th column point of this product

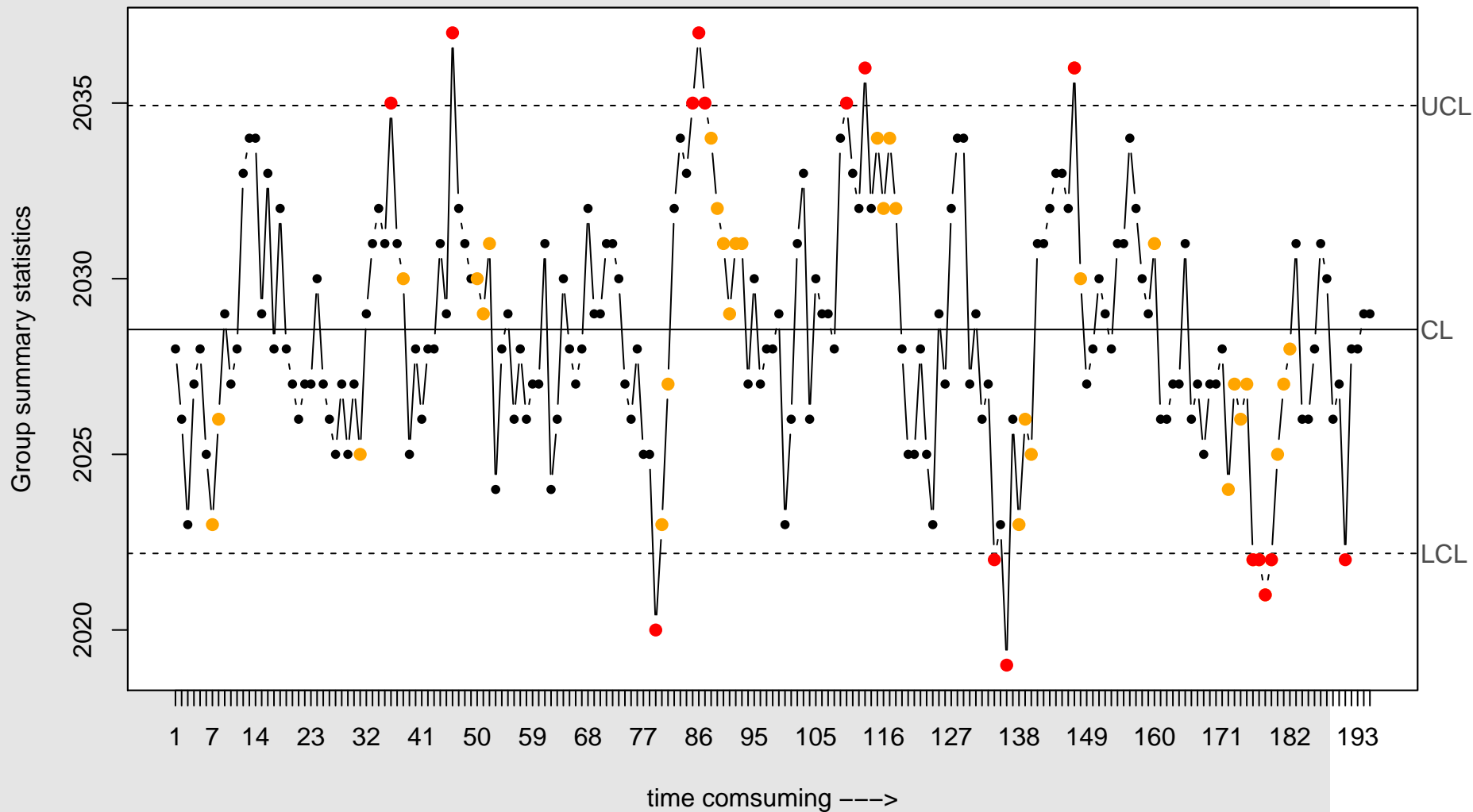


Number of groups = 195  
Center = 2028.426  
StdDev = 2.115778

LCL = 2022.078  
UCL = 2034.773

Number beyond limits = 18  
Number violating runs = 37

# 69th column point of this product



Number of groups = 195

Center = 2028.554

StdDev = 2.124918

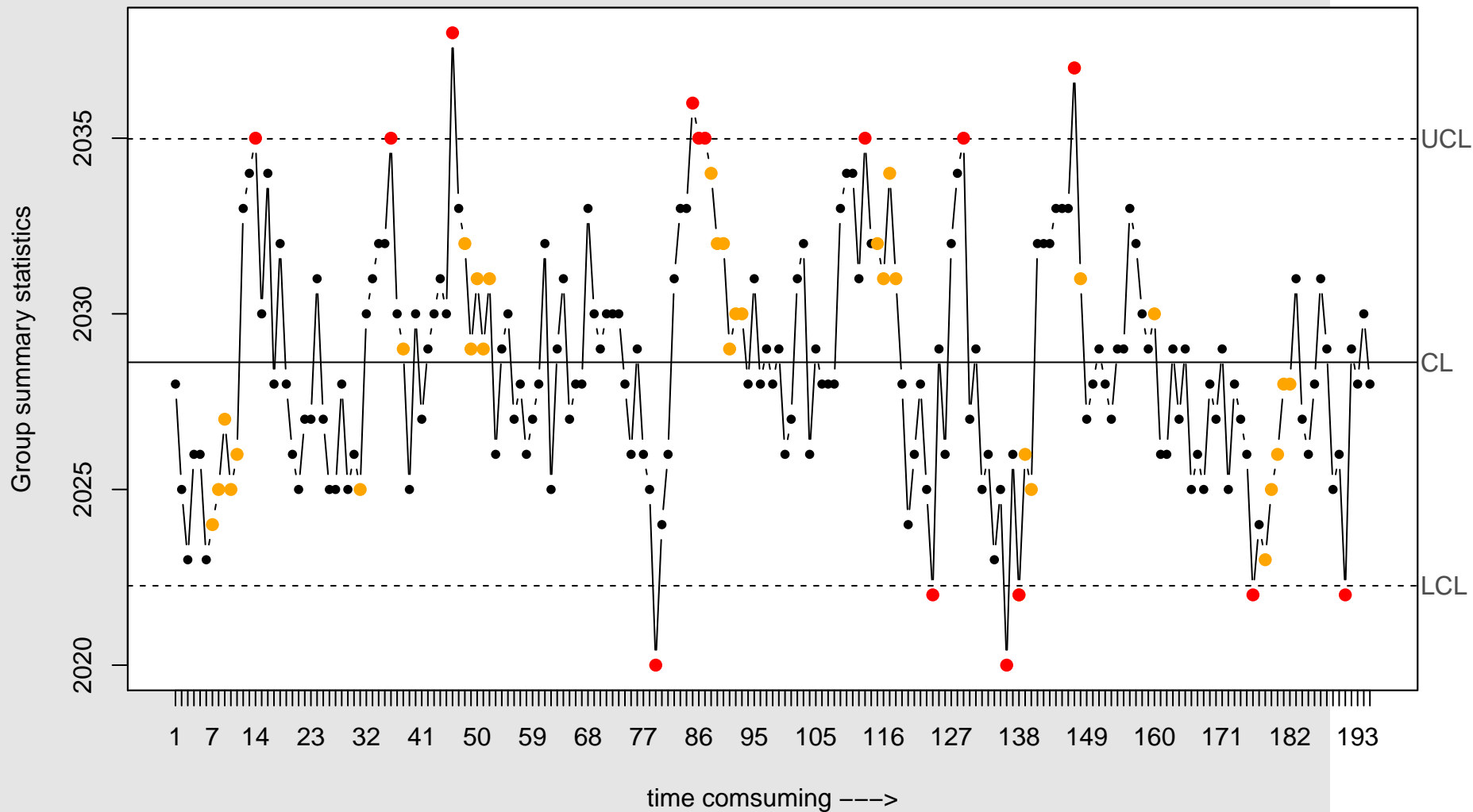
LCL = 2022.179

UCL = 2034.929

Number beyond limits = 16

Number violating runs = 36

# 70th column point of this product



Number of groups = 195

Center = 2028.621

StdDev = 2.120348

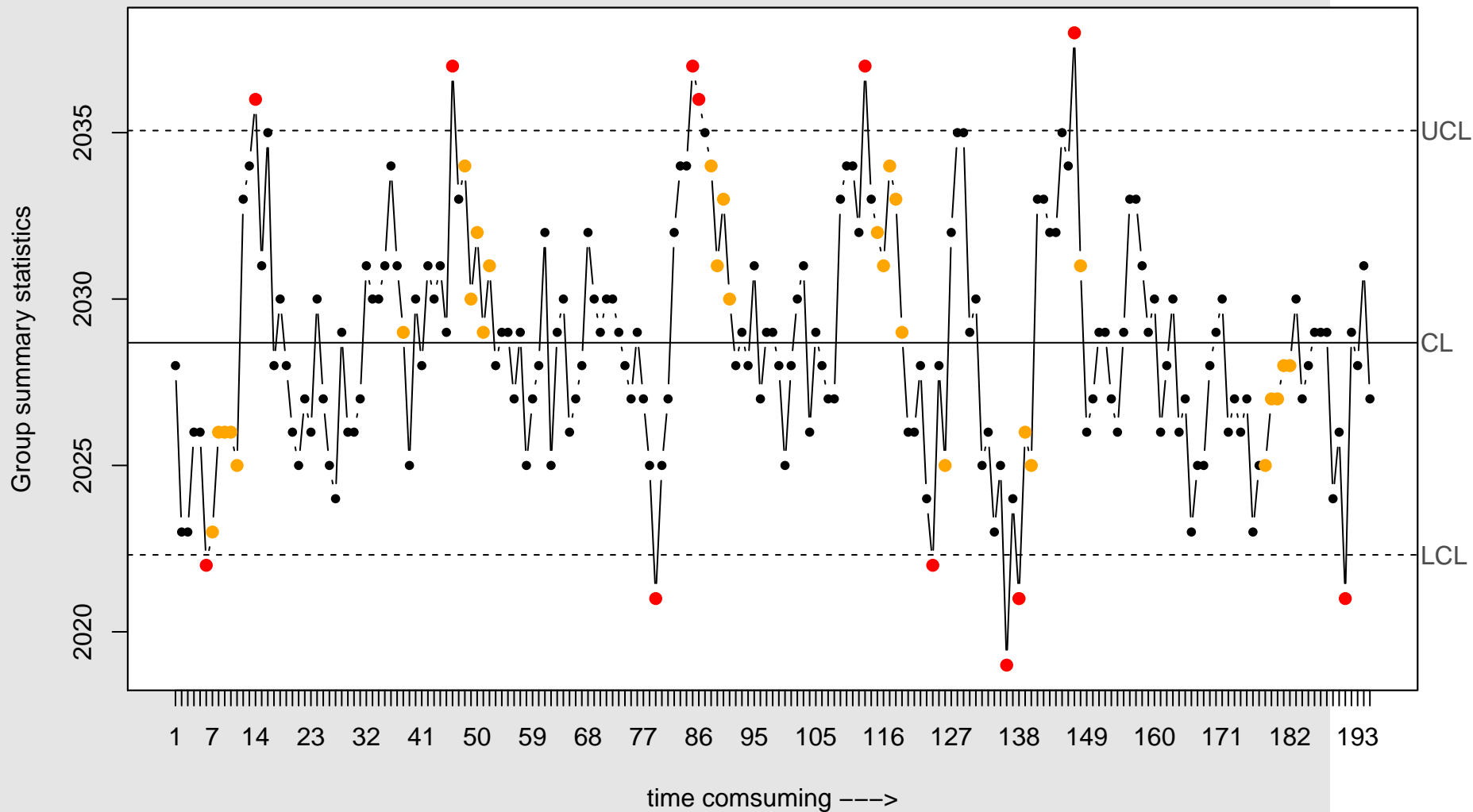
LCL = 2022.259

UCL = 2034.982

Number beyond limits = 15

Number violating runs = 33

# 71th column point of this product

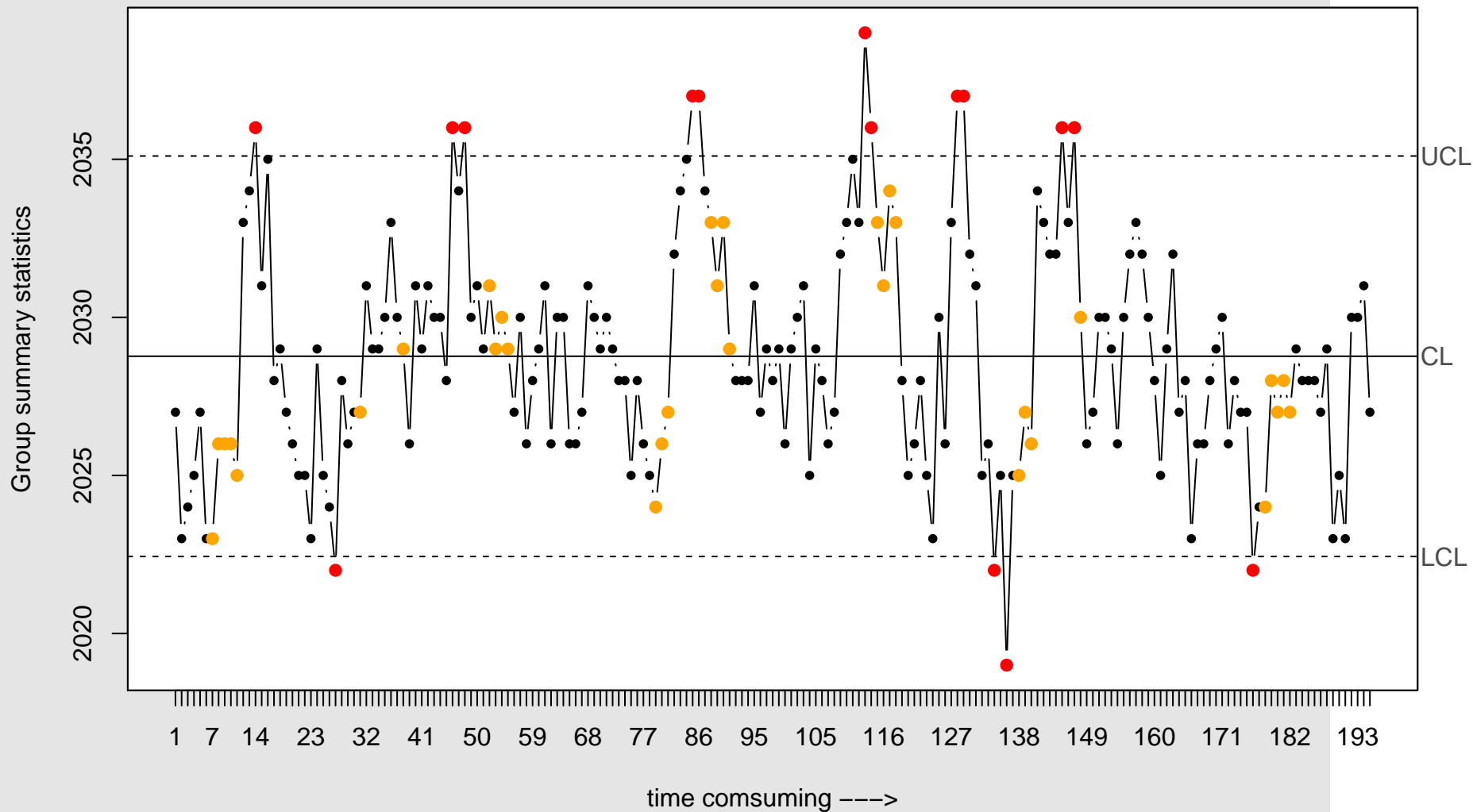


Number of groups = 195  
Center = 2028.687  
StdDev = 2.124918

LCL = 2022.312  
UCL = 2035.062

Number beyond limits = 12  
Number violating runs = 31

## 72th column point of this product

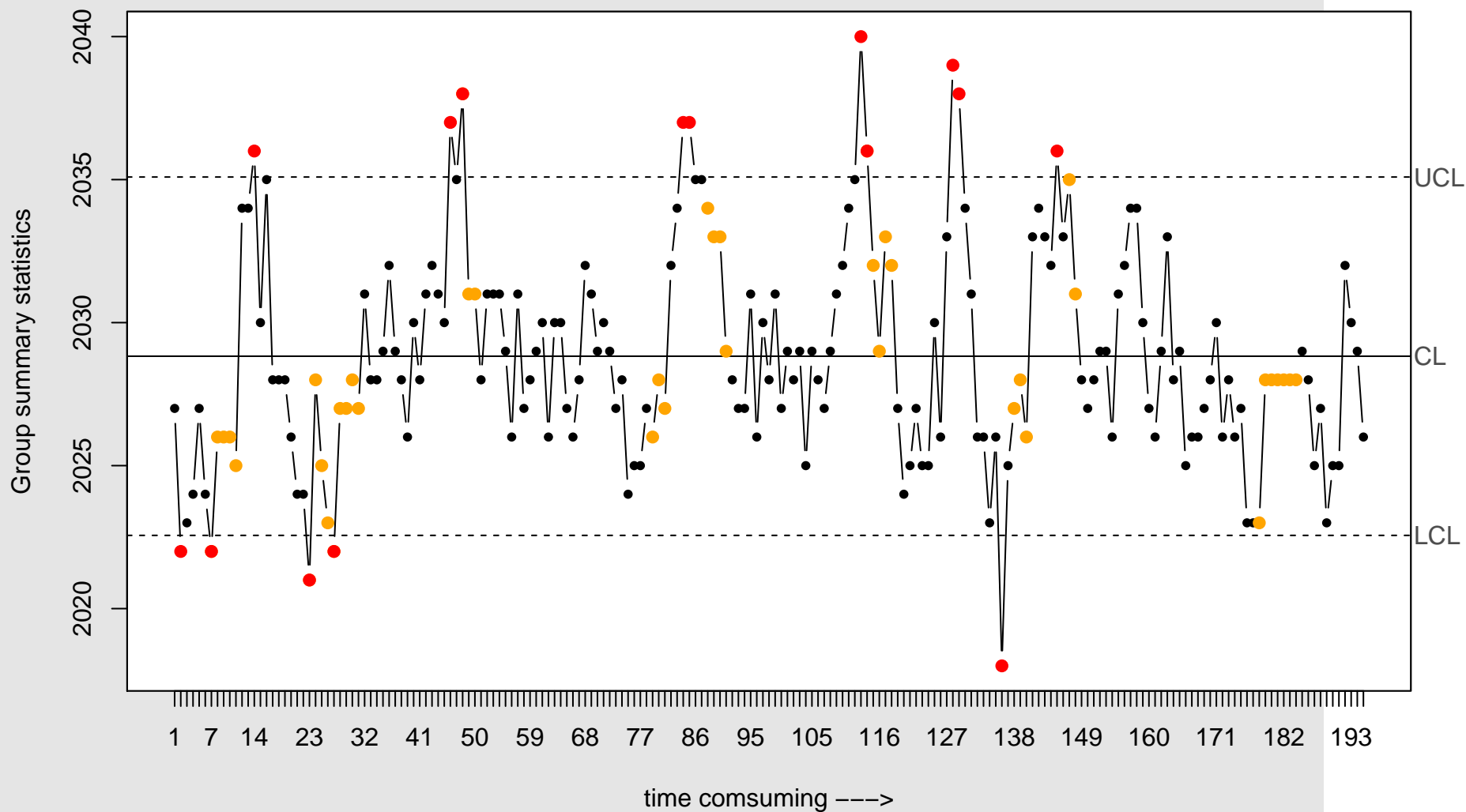


Number of groups = 195  
Center = 2028.769  
StdDev = 2.111209

LCL = 2022.436  
UCL = 2035.103

Number beyond limits = 15  
Number violating runs = 32

# 73th column point of this product



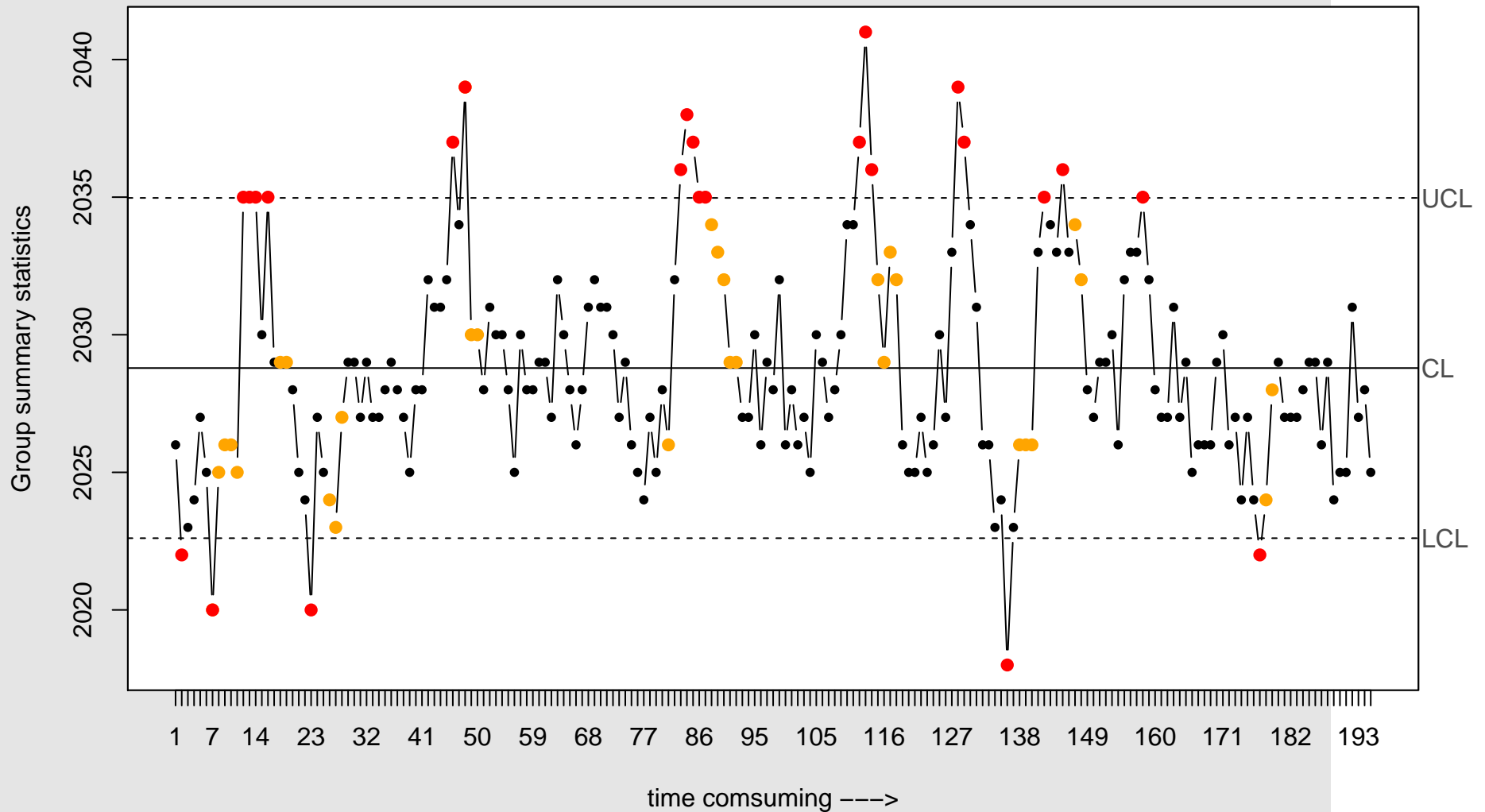
Number of groups = 195  
Center = 2028.826  
StdDev = 2.08836

LCL = 2022.561  
UCL = 2035.091

Number beyond limits = 15  
Number violating runs = 41



# 74th column point of this product

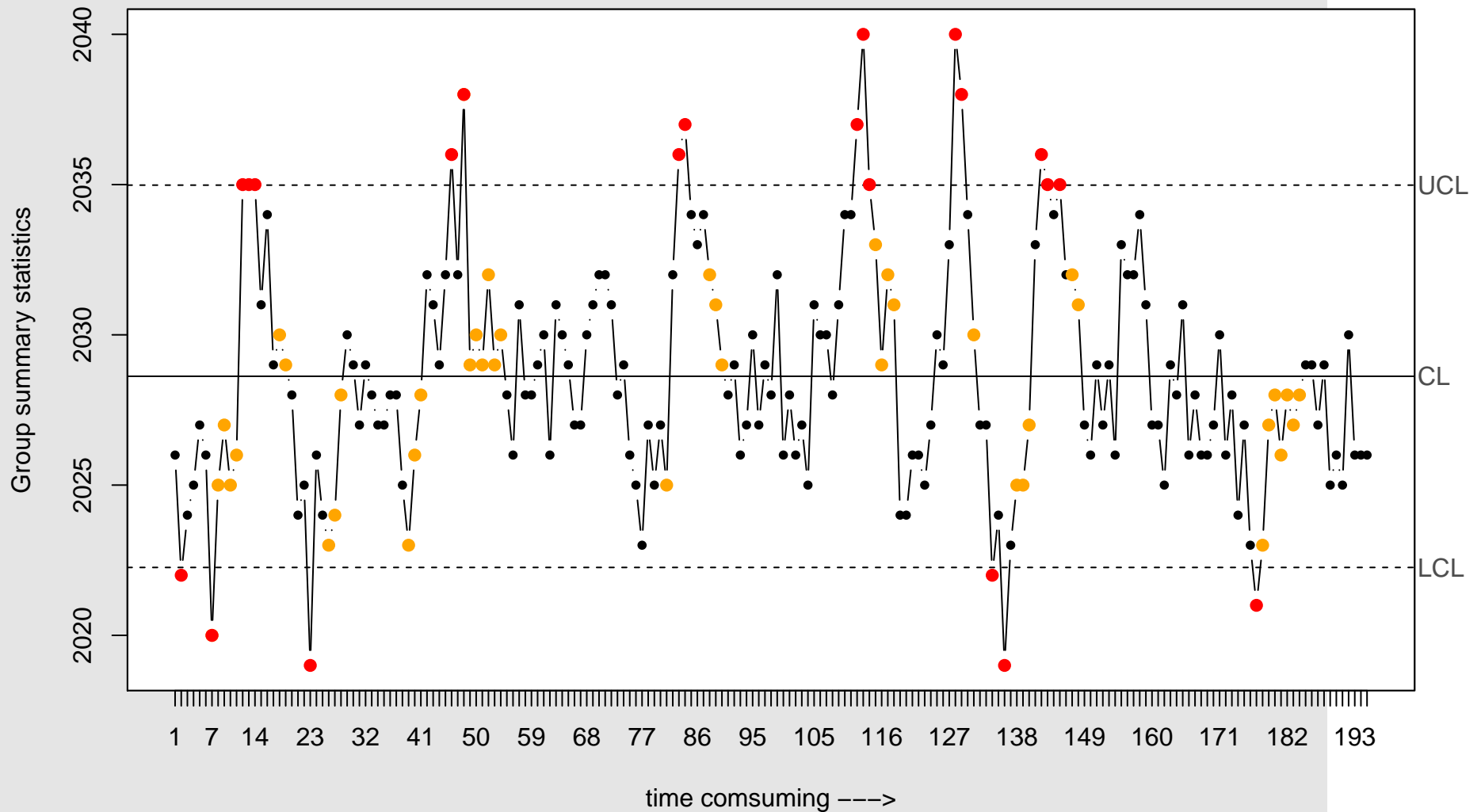


Number of groups = 195  
 Center = 2028.79  
 StdDev = 2.060942

LCL = 2022.607  
 UCL = 2034.973

Number beyond limits = 24  
 Number violating runs = 30

# 75th column point of this product

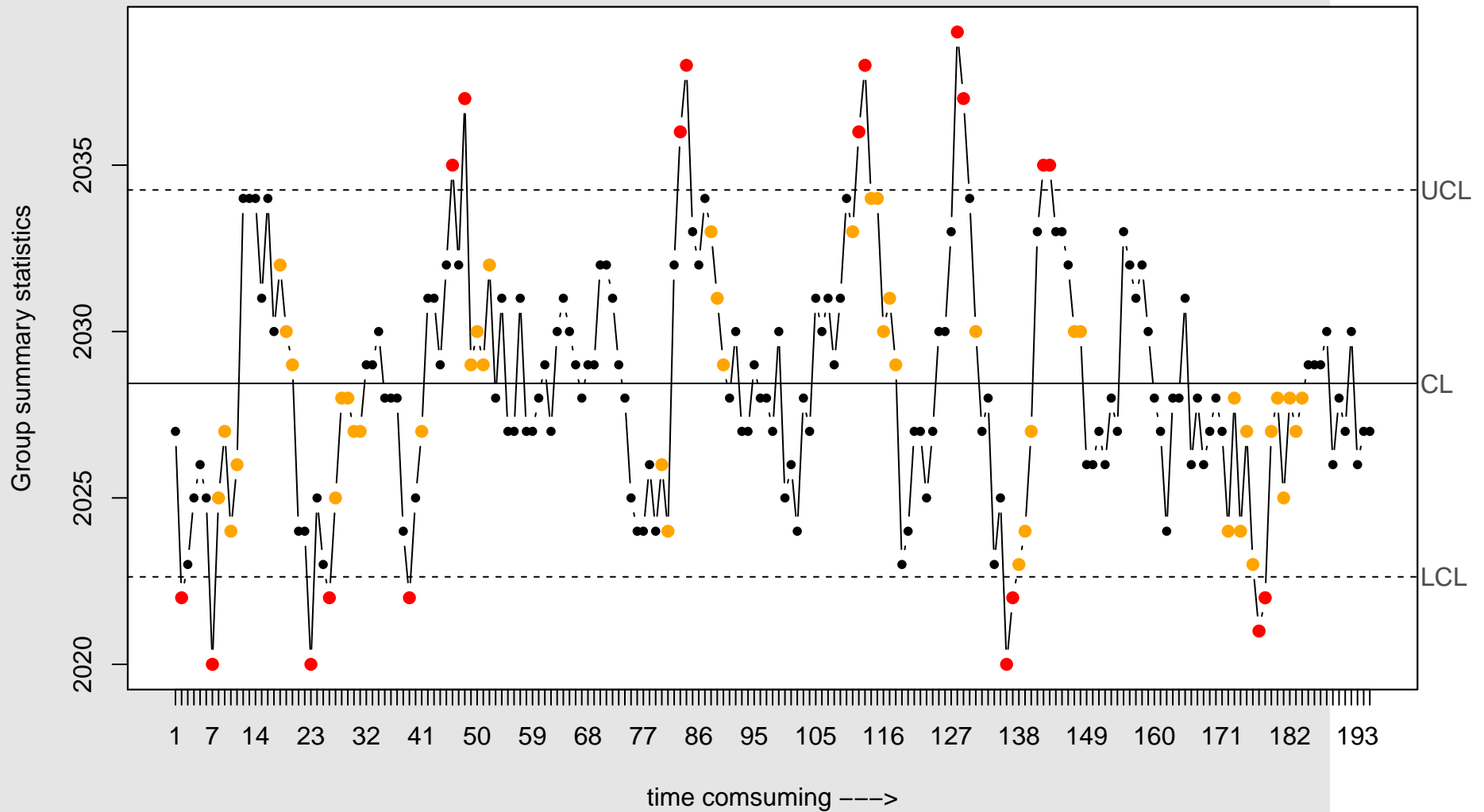


Number of groups = 195  
 Center = 2028.621  
 StdDev = 2.120348

LCL = 2022.259  
 UCL = 2034.982

Number beyond limits = 21  
 Number violating runs = 41

## 76th column point of this product

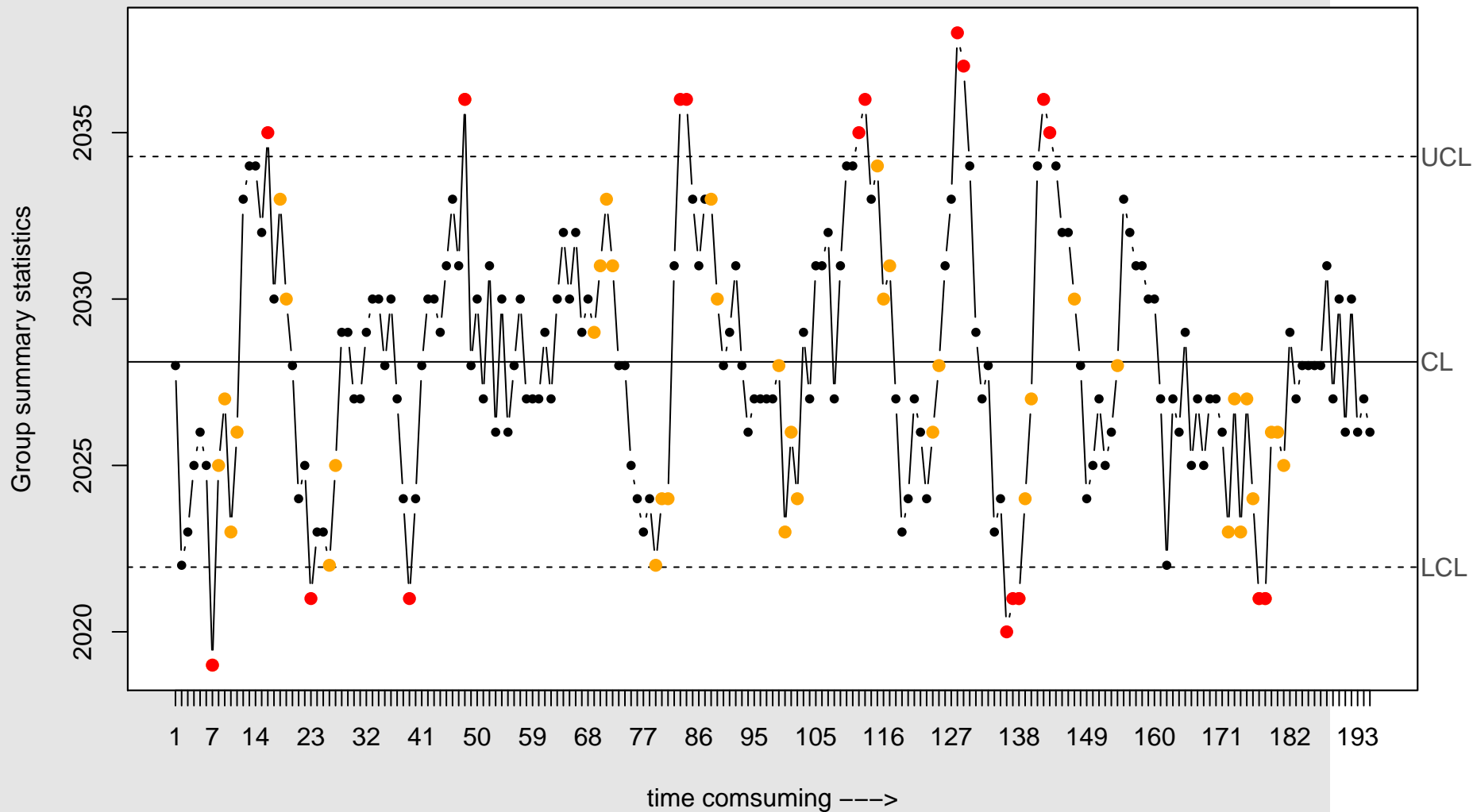


Number of groups = 195  
 Center = 2028.441  
 StdDev = 1.937559

LCL = 2022.628  
 UCL = 2034.254

Number beyond limits = 19  
 Number violating runs = 51

# 77th column point of this product



Number of groups = 195

Center = 2028.113

StdDev = 2.056372

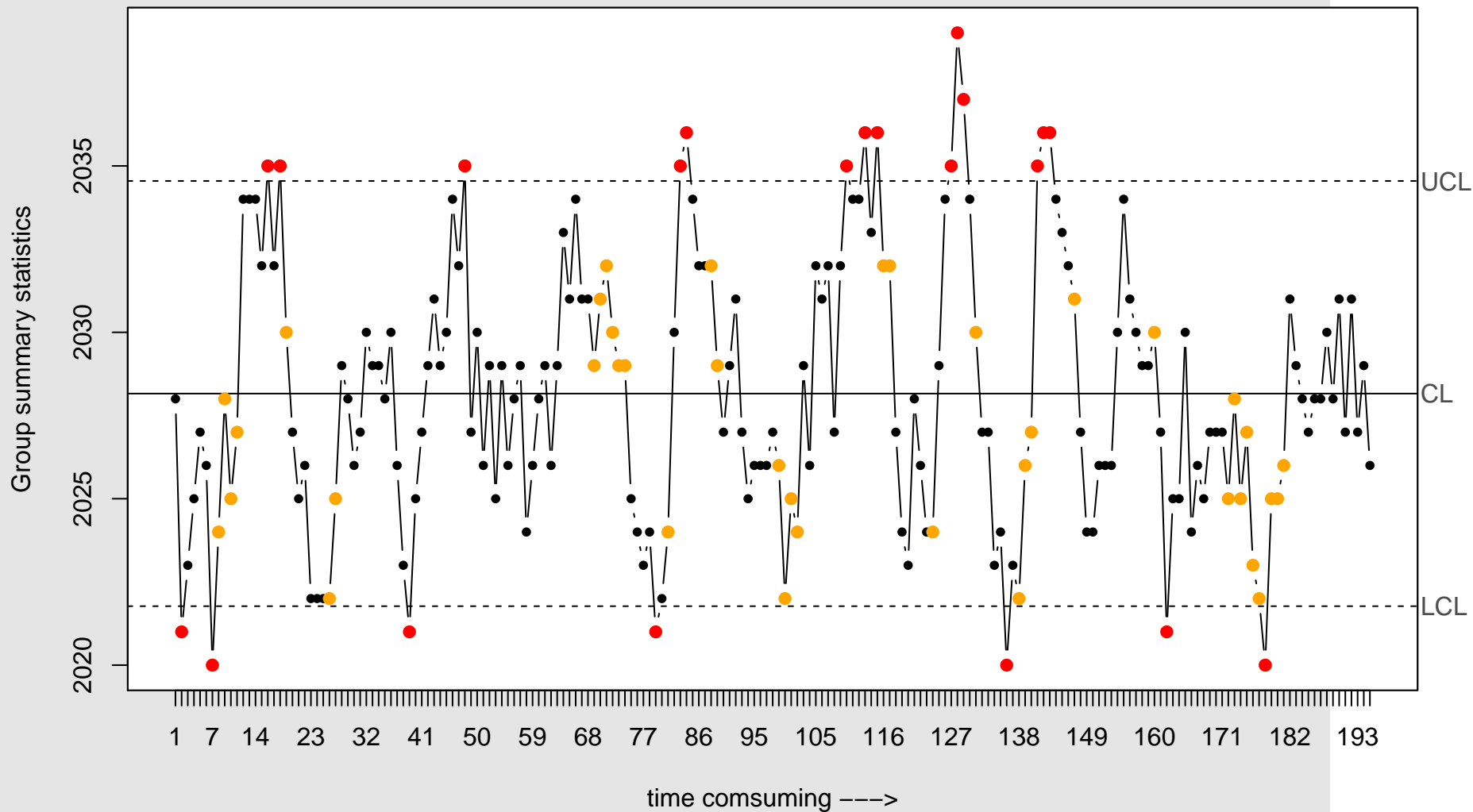
LCL = 2021.944

UCL = 2034.282

Number beyond limits = 18

Number violating runs = 43

# 78th column point of this product

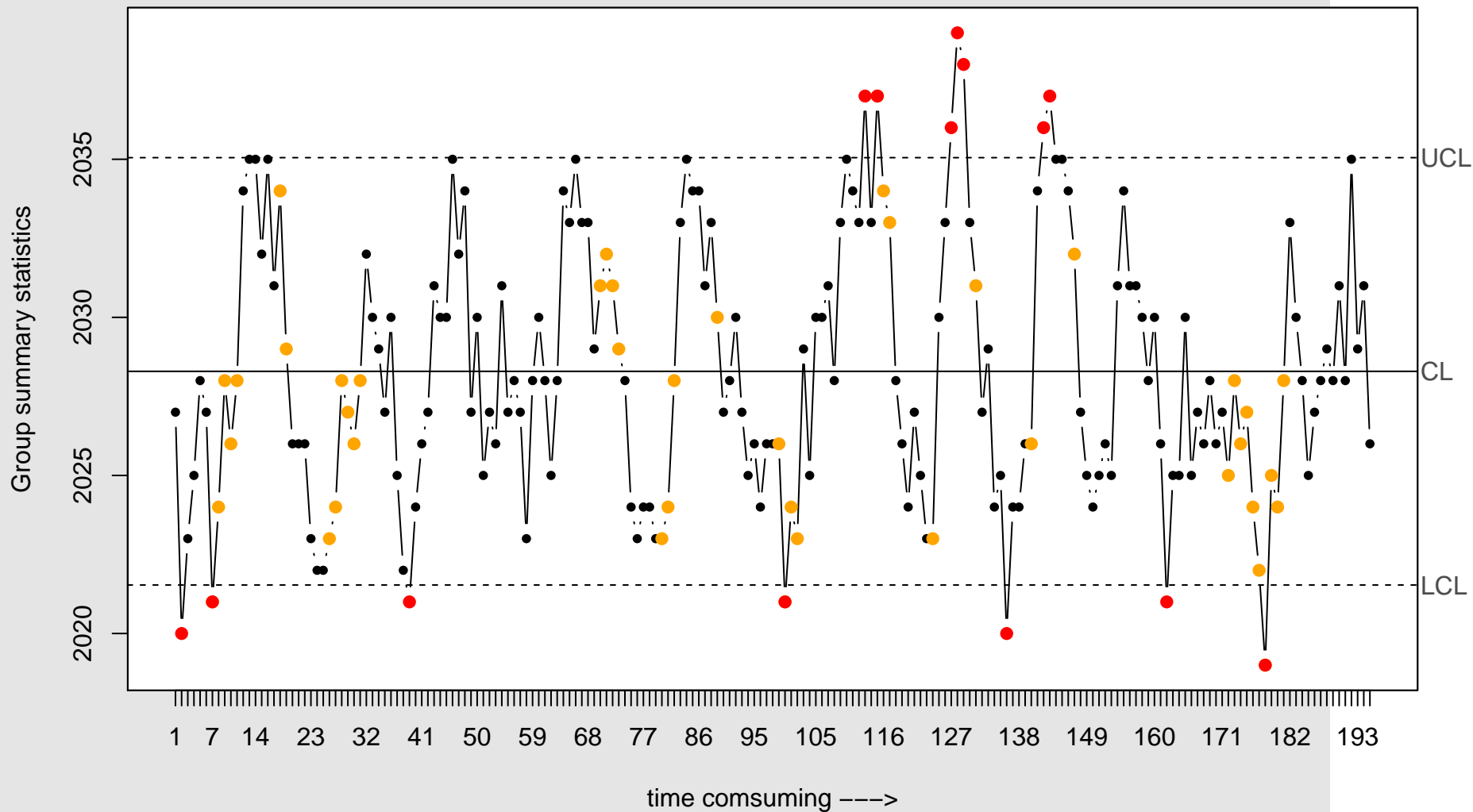


Number of groups = 195  
Center = 2028.159  
StdDev = 2.129487

LCL = 2021.771  
UCL = 2034.547

Number beyond limits = 21  
Number violating runs = 43

# 79th column point of this product

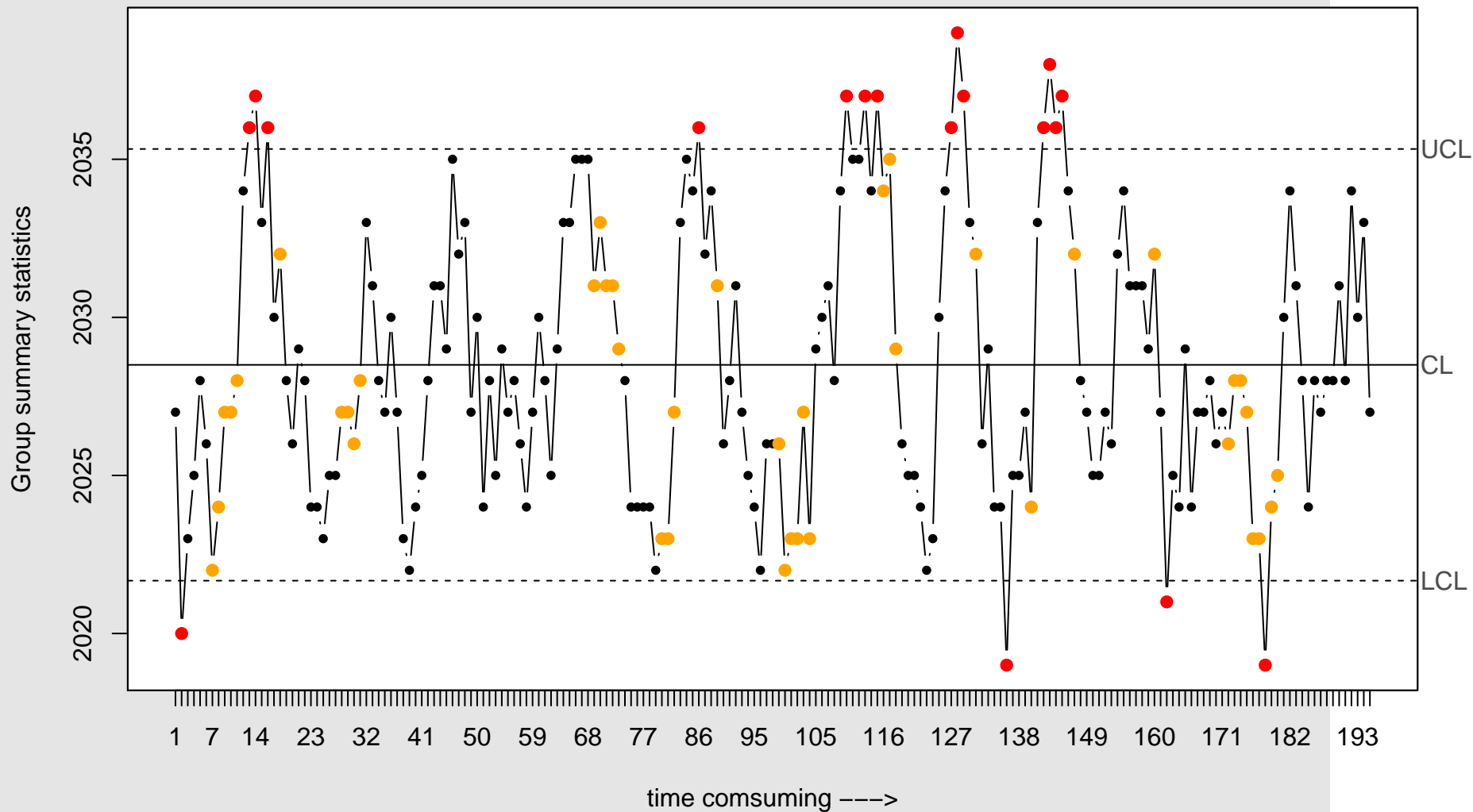


Number of groups = 195  
Center = 2028.292  
StdDev = 2.25287

LCL = 2021.534  
UCL = 2035.051

Number beyond limits = 14  
Number violating runs = 42

# 80th column point of this product



Number of groups = 195

Center = 2028.497

StdDev = 2.275718

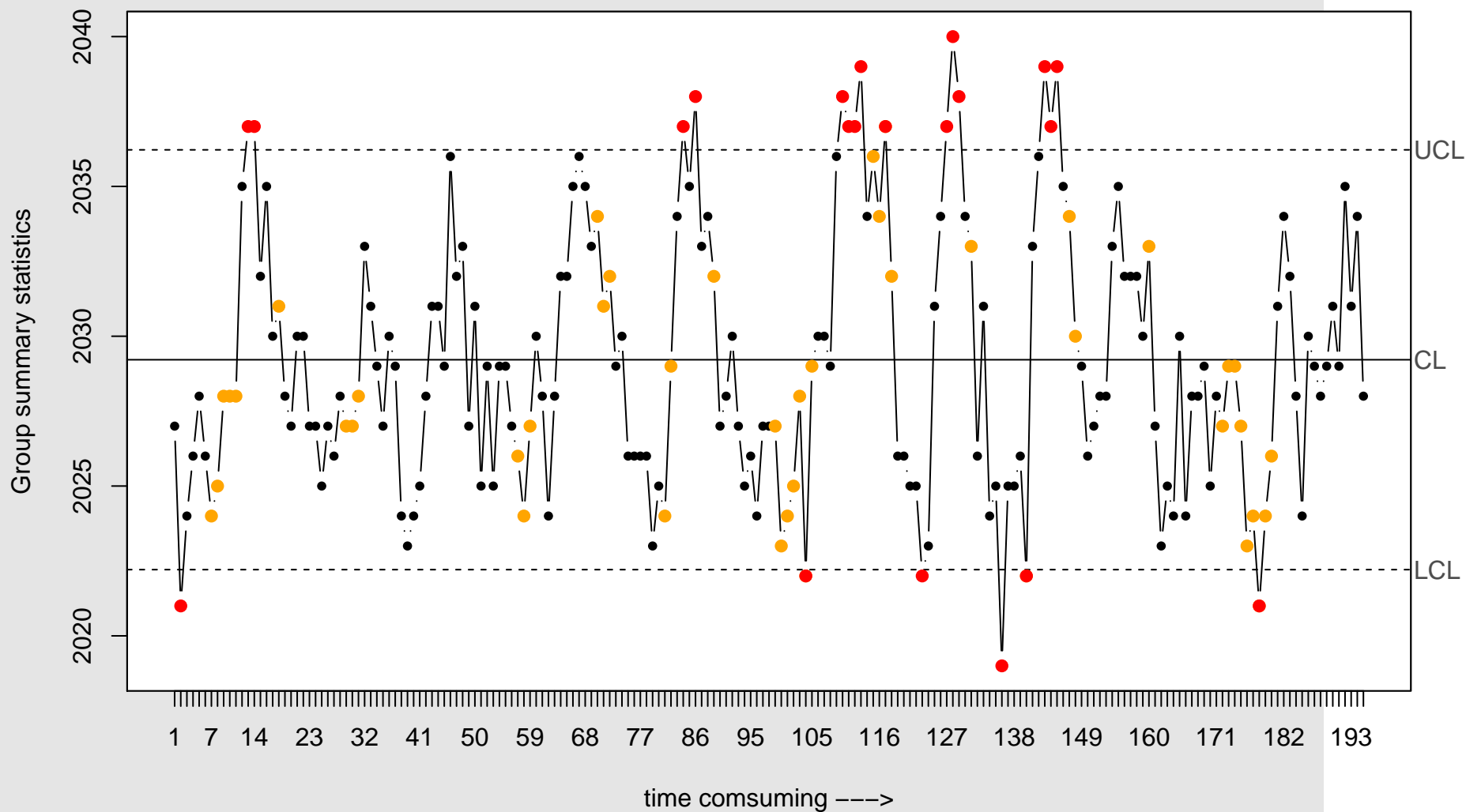
LCL = 2021.67

UCL = 2035.325

Number beyond limits = 18

Number violating runs = 42

# 81th column point of this product



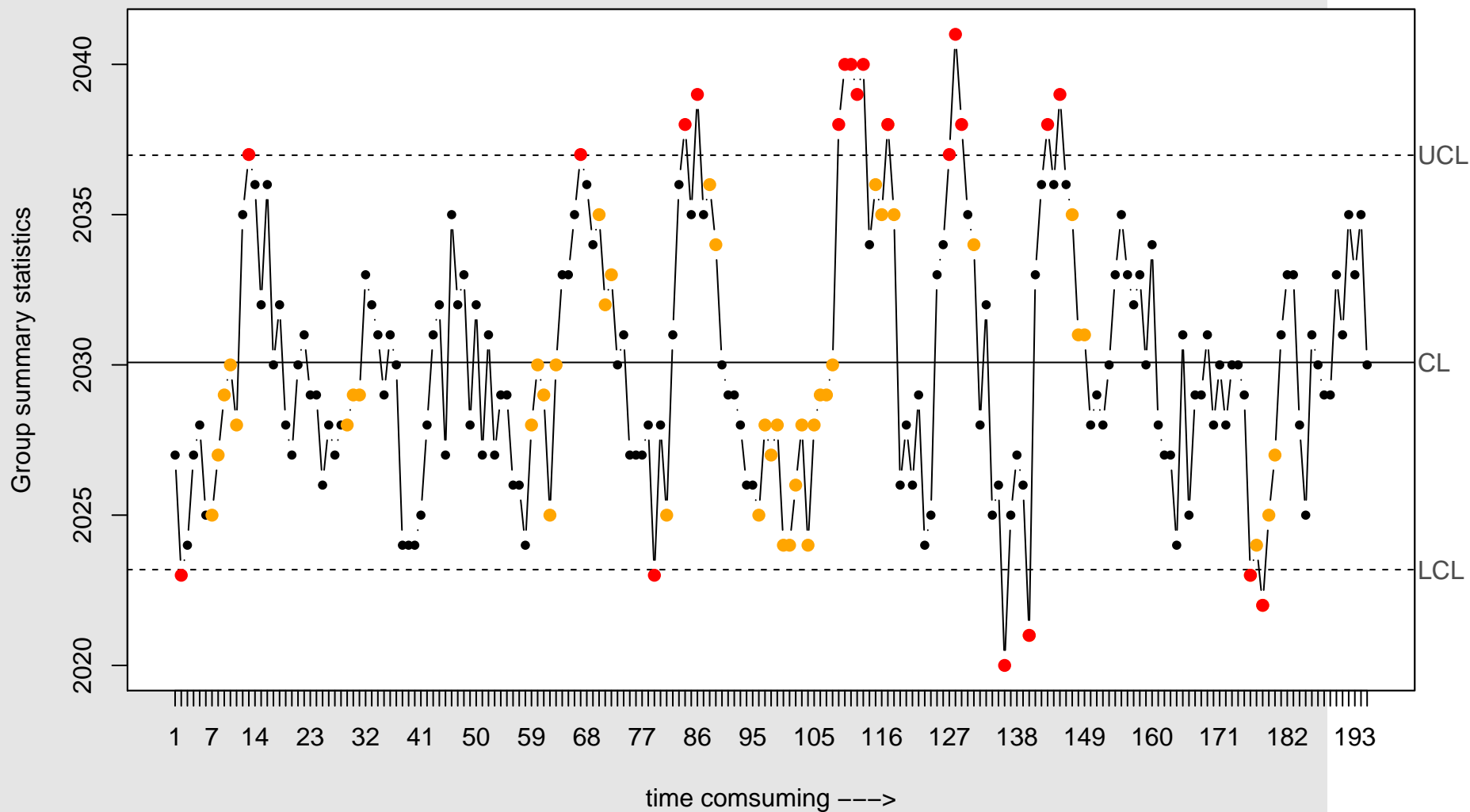
Number of groups = 195  
Center = 2029.215  
StdDev = 2.335125

LCL = 2022.21  
UCL = 2036.221

Number beyond limits = 21  
Number violating runs = 43



# 82th column point of this product

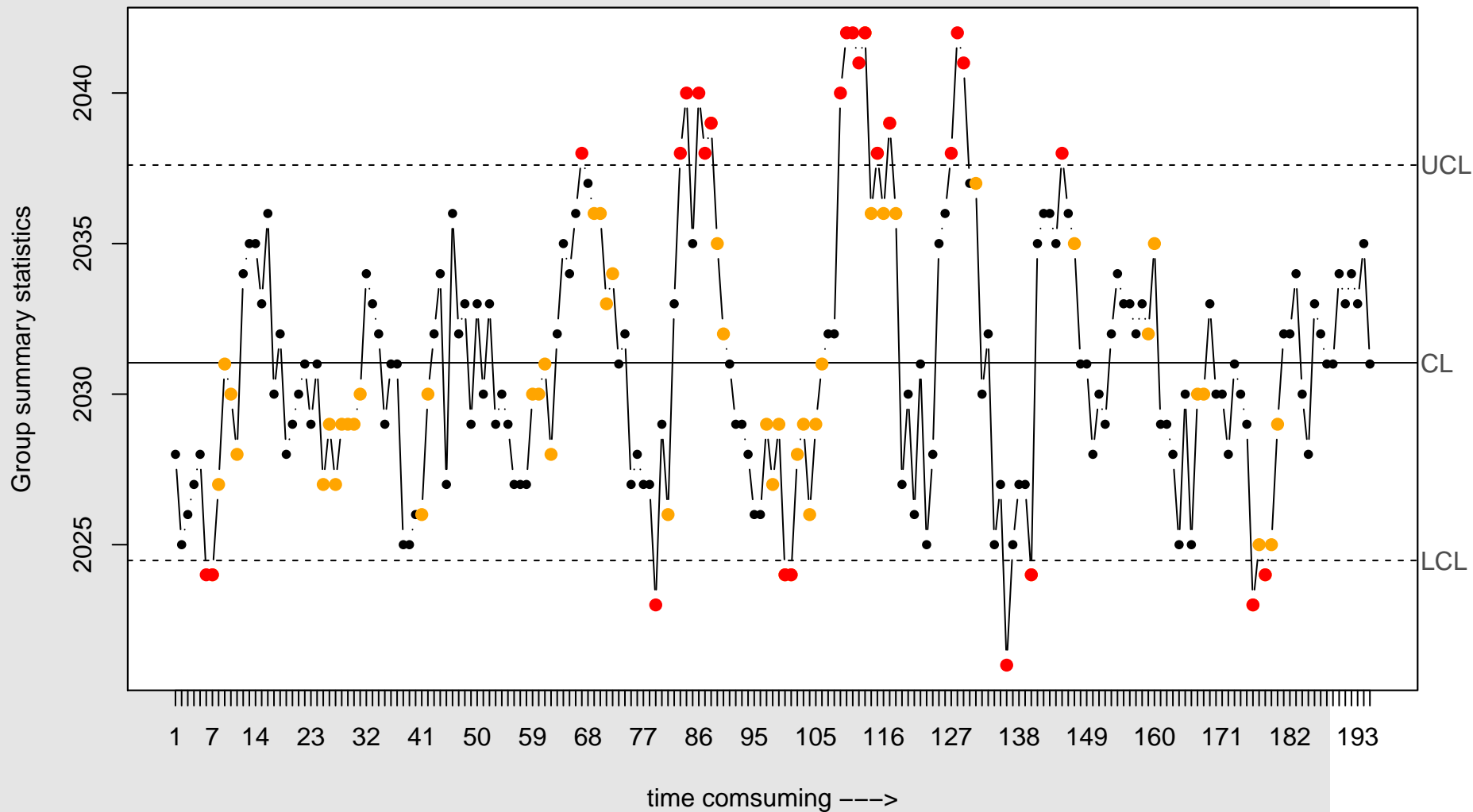


Number of groups = 195  
Center = 2030.082  
StdDev = 2.298567

LCL = 2023.186  
UCL = 2036.978

Number beyond limits = 21  
Number violating runs = 46

# 83th column point of this product



Number of groups = 195

Center = 2031.041

StdDev = 2.188894

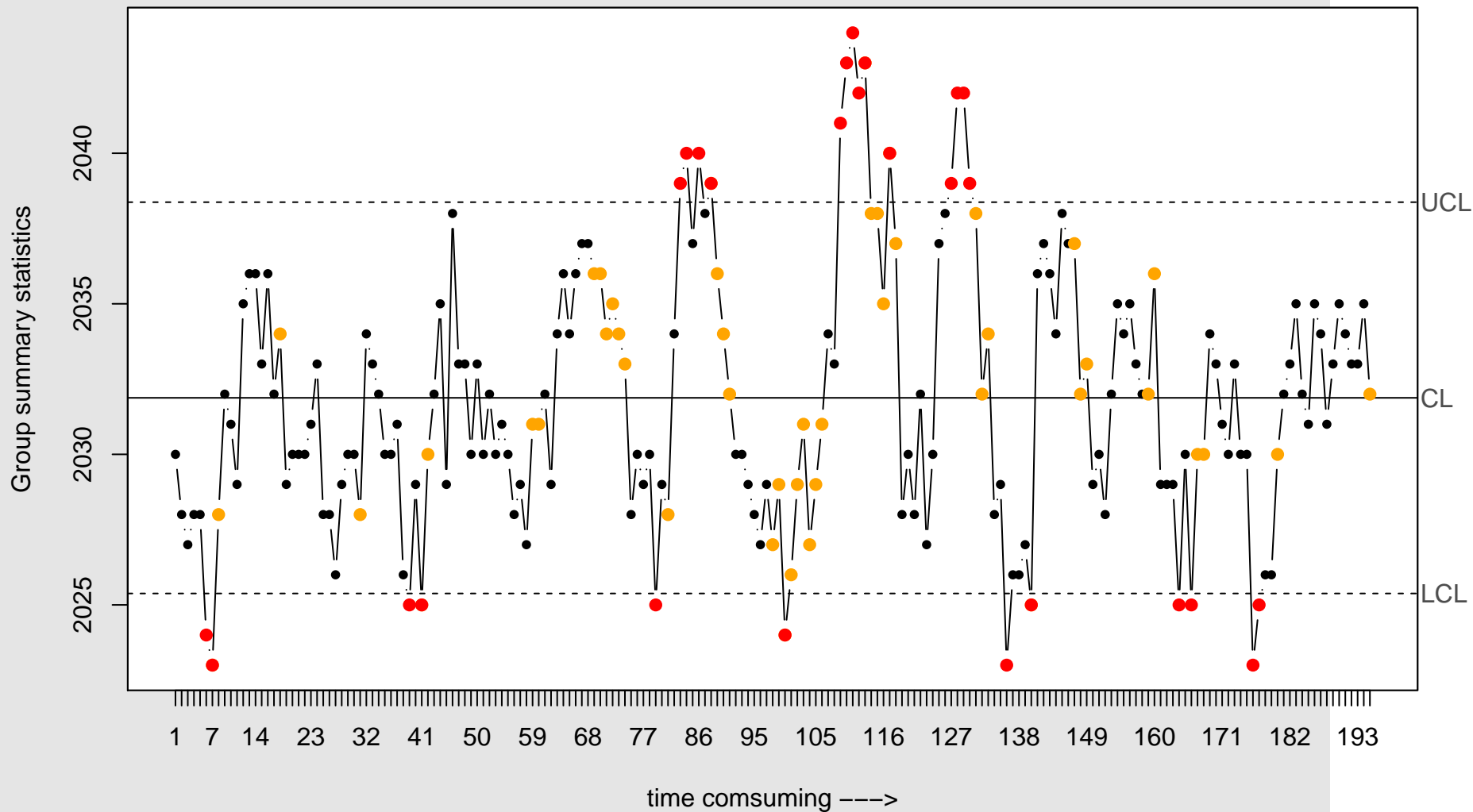
LCL = 2024.474

UCL = 2037.608

Number beyond limits = 26

Number violating runs = 54

# 84th column point of this product



Number of groups = 195

Center = 2031.877

StdDev = 2.166045

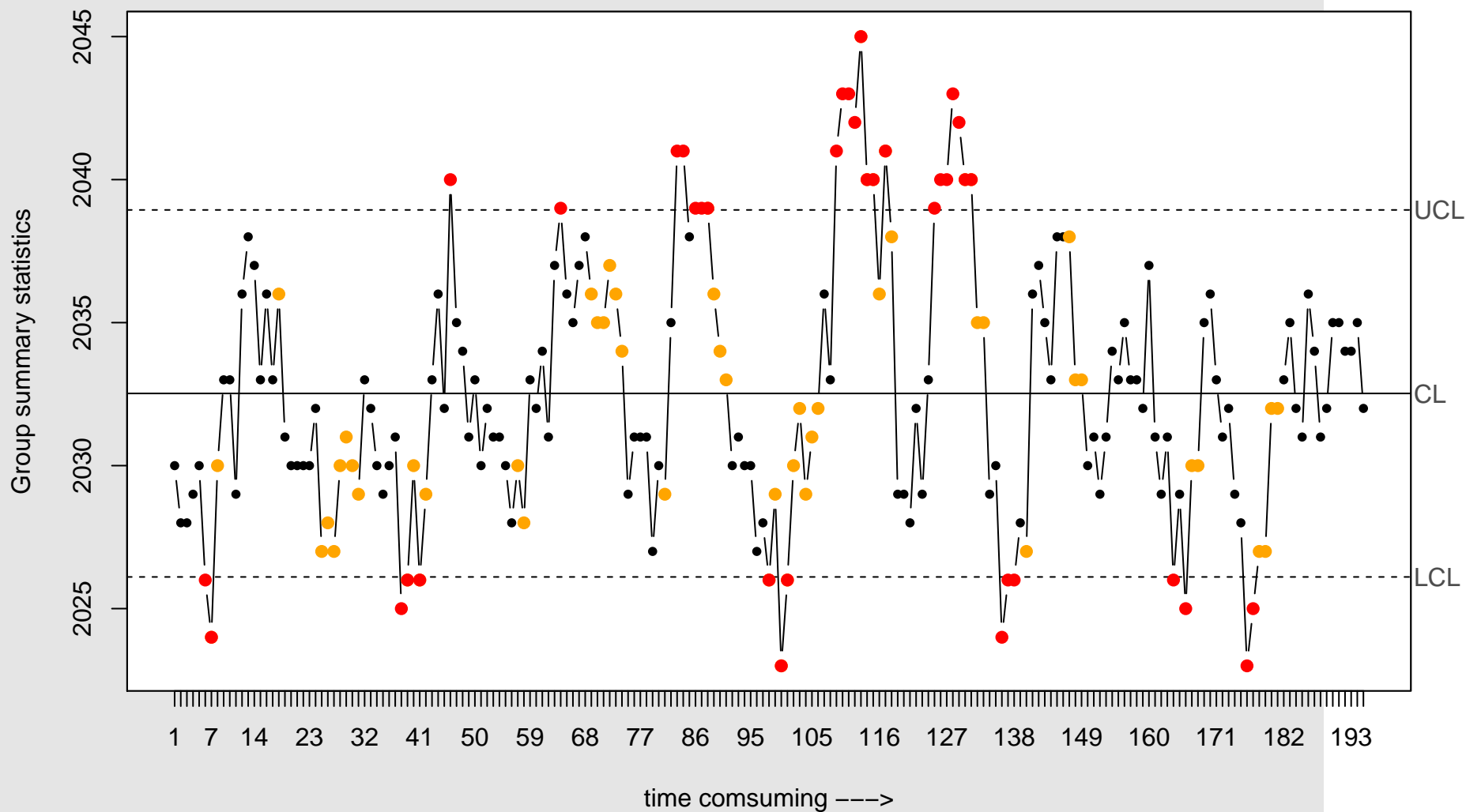
LCL = 2025.379

UCL = 2038.375

Number beyond limits = 26

Number violating runs = 47

# 85th column point of this product

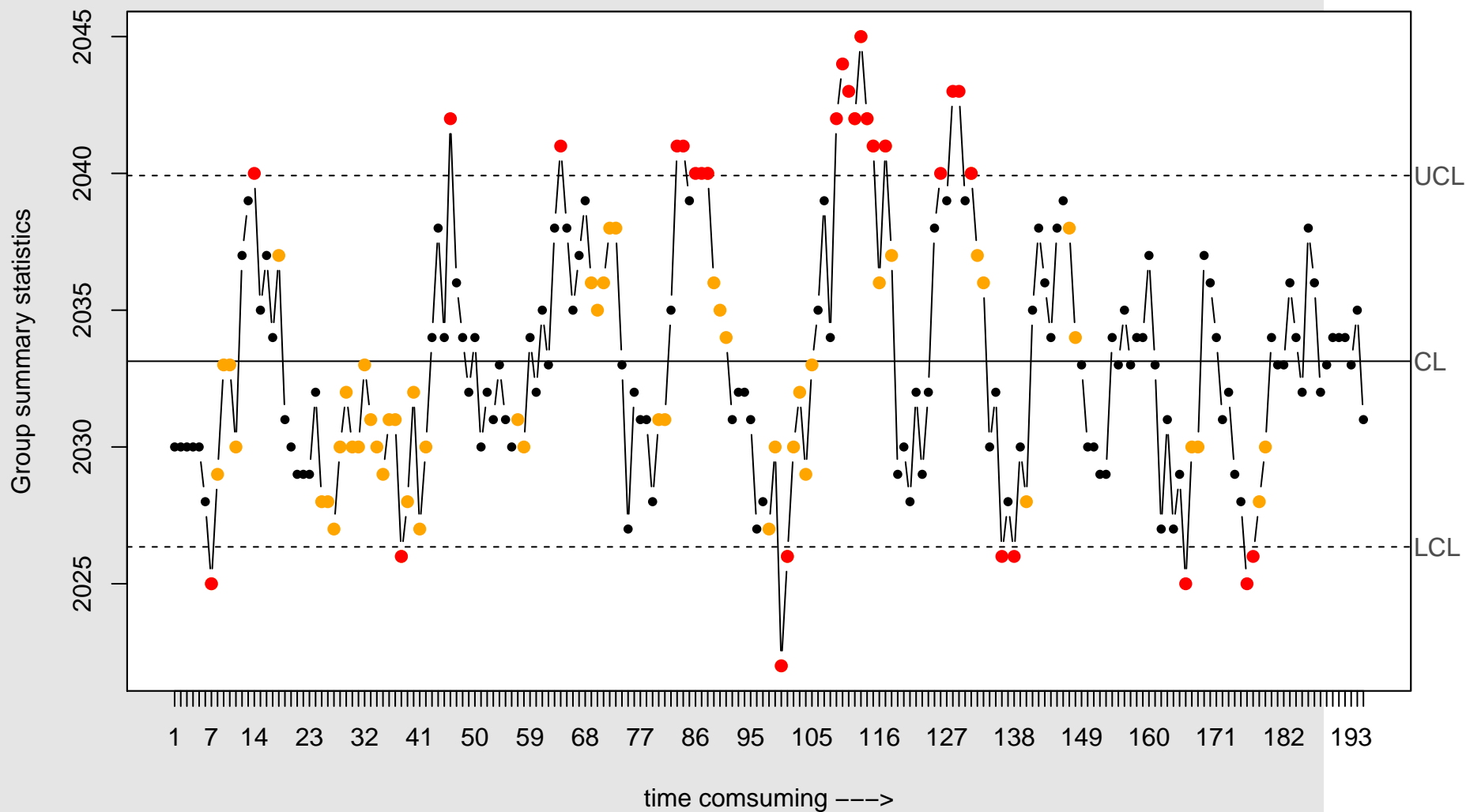


Number of groups = 195  
Center = 2032.523  
StdDev = 2.138627

LCL = 2026.107  
UCL = 2038.939

Number beyond limits = 37  
Number violating runs = 56

# 86th column point of this product

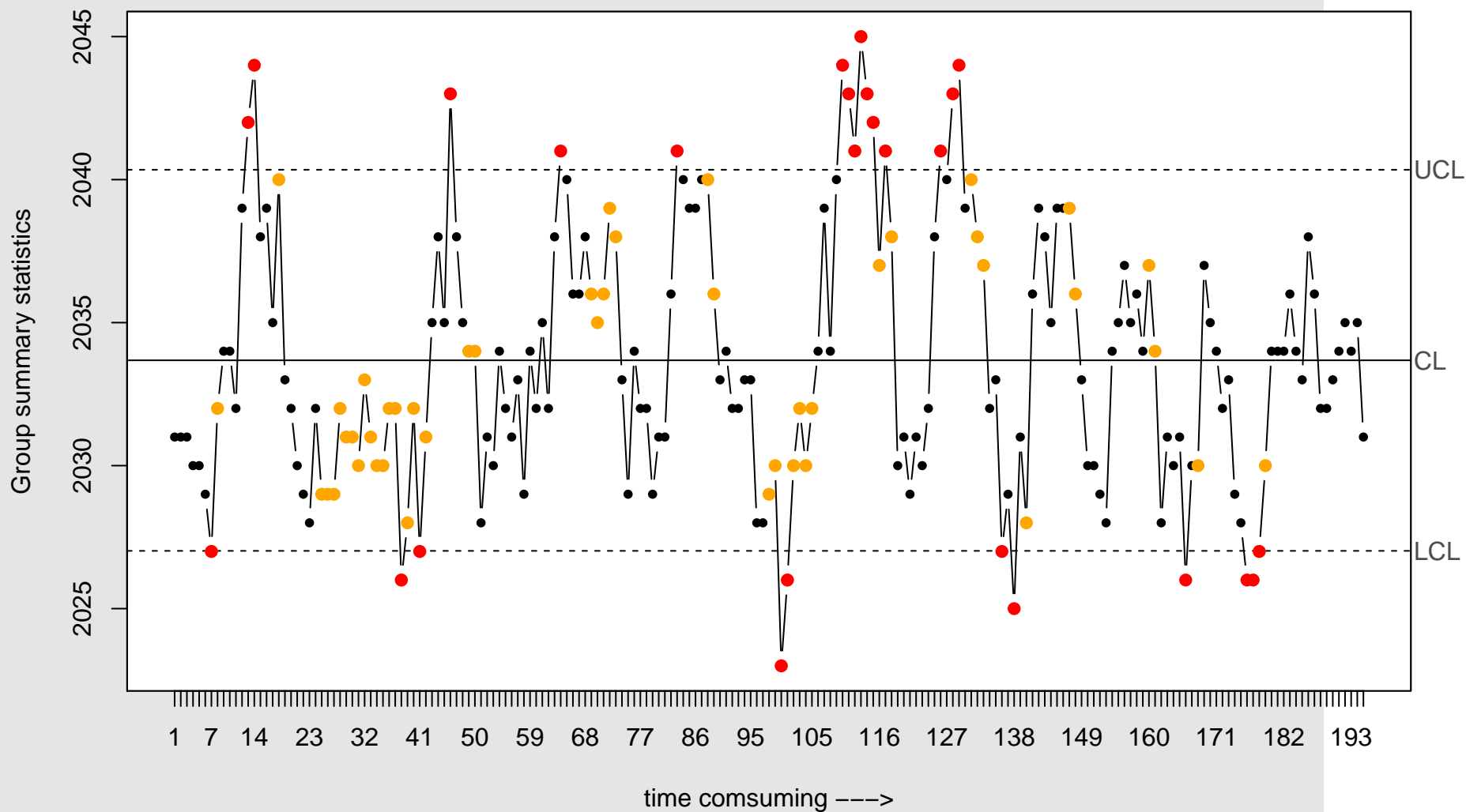


Number of groups = 195  
Center = 2033.133  
StdDev = 2.262009

LCL = 2026.347  
UCL = 2039.919

Number beyond limits = 29  
Number violating runs = 62

# 87th column point of this product

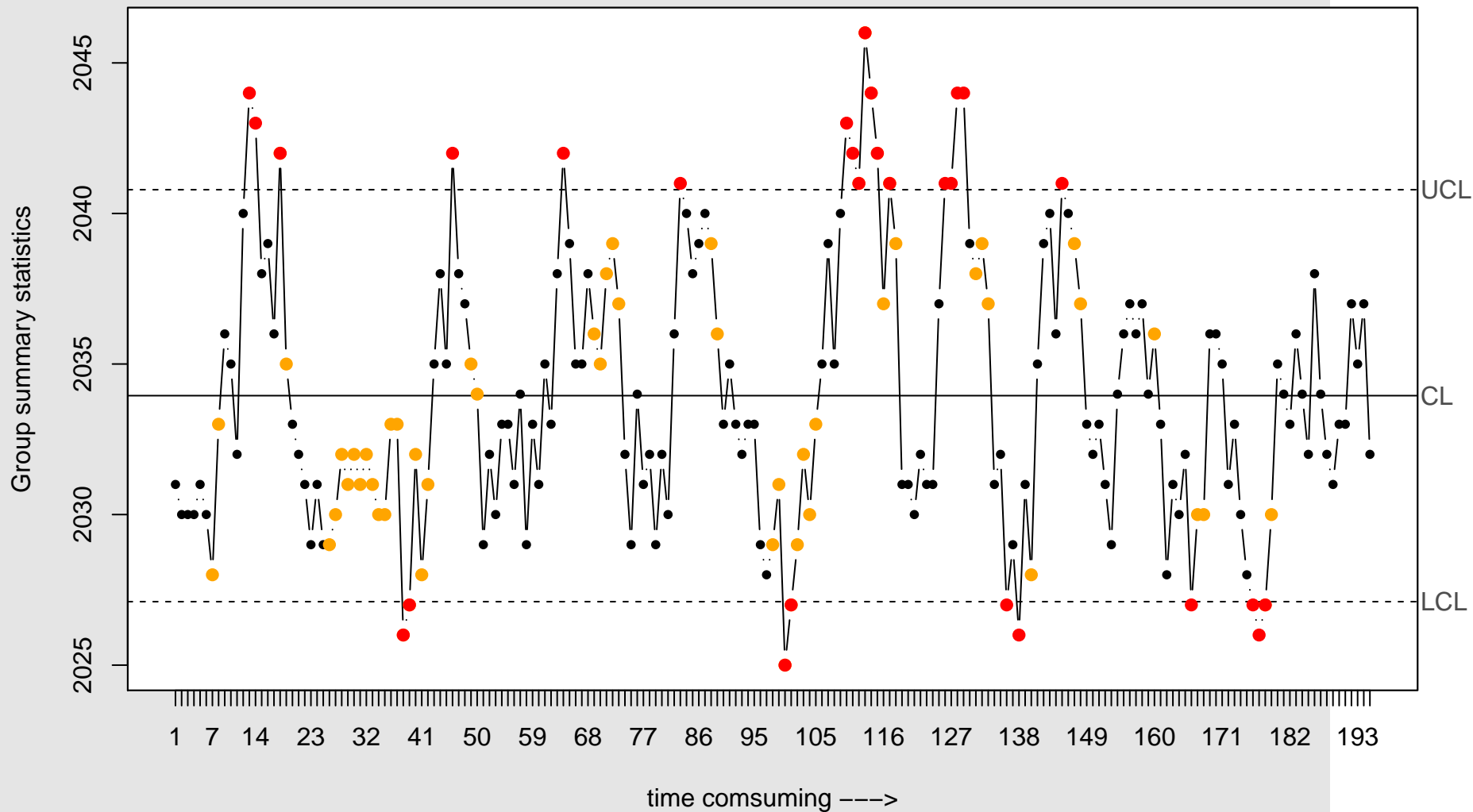


Number of groups = 195  
Center = 2033.682  
StdDev = 2.220882

LCL = 2027.019  
UCL = 2040.345

Number beyond limits = 26  
Number violating runs = 56

# 88th column point of this product



Number of groups = 195

Center = 2033.949

StdDev = 2.280288

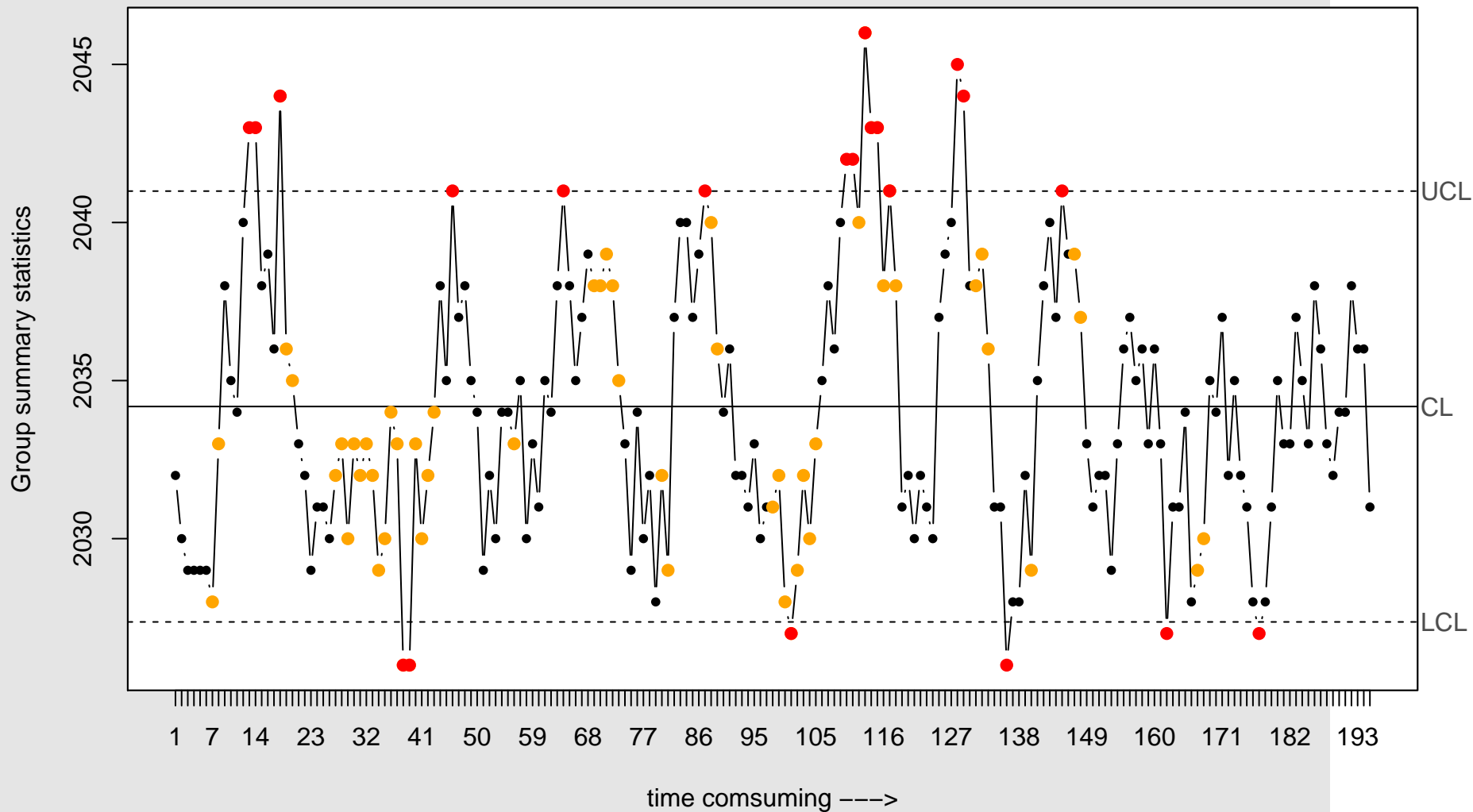
LCL = 2027.108

UCL = 2040.79

Number beyond limits = 28

Number violating runs = 56

# 89th column point of this product



Number of groups = 195

Center = 2034.179

StdDev = 2.271149

LCL = 2027.366

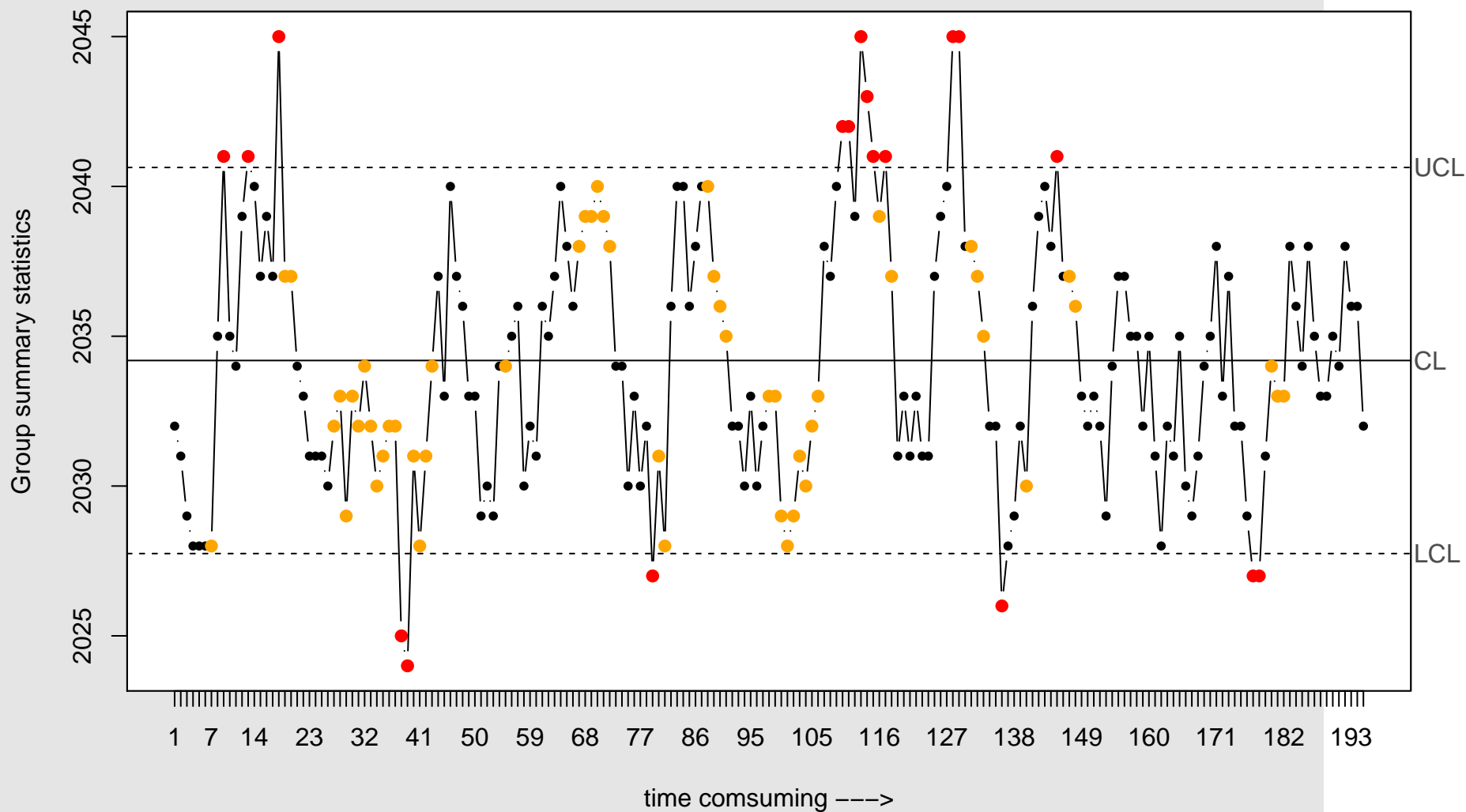
UCL = 2040.993

Number beyond limits = 21

Number violating runs = 55



# 90th column point of this product

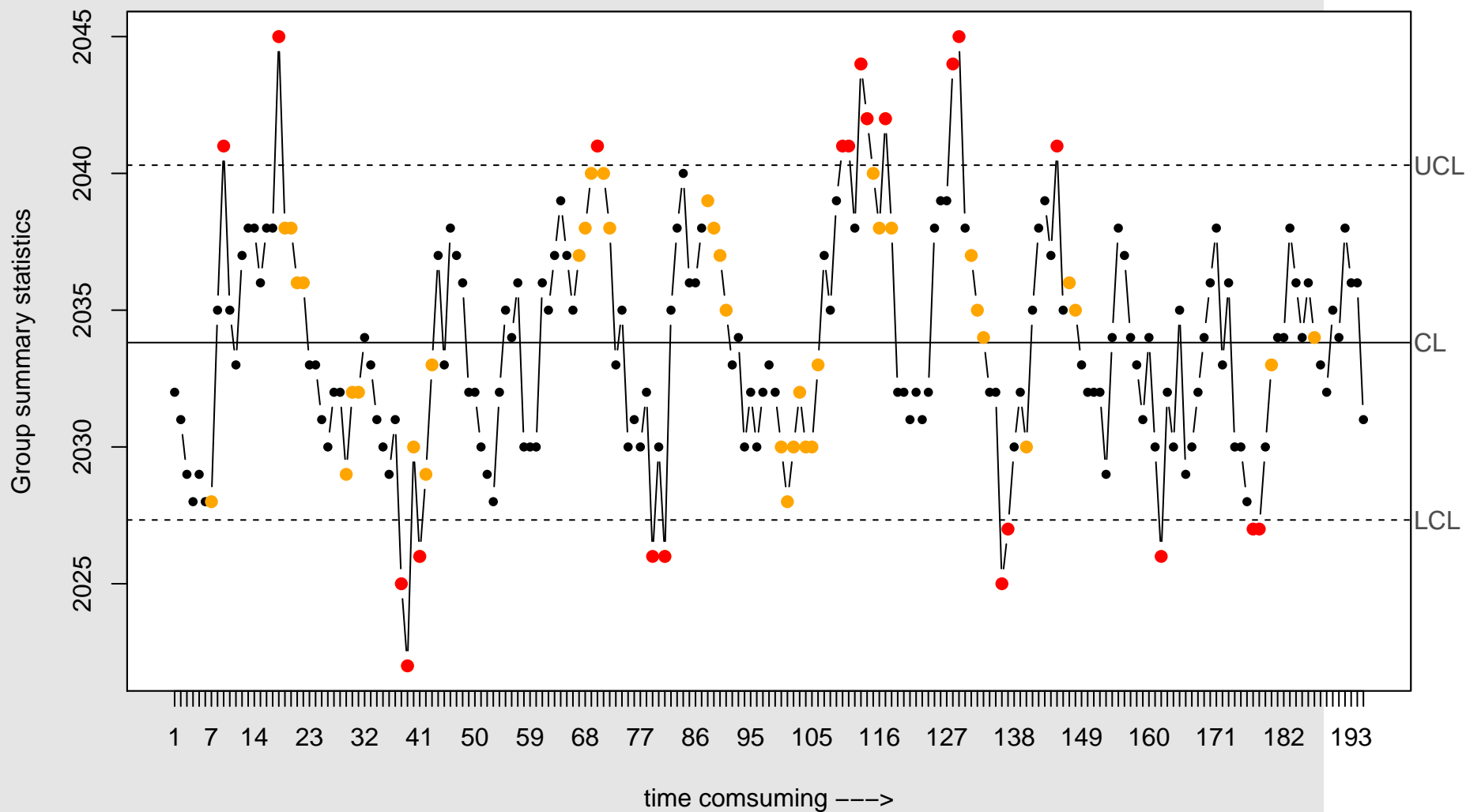


Number of groups = 195  
Center = 2034.19  
StdDev = 2.147766

LCL = 2027.746  
UCL = 2040.633

Number beyond limits = 18  
Number violating runs = 59

# 91th column point of this product

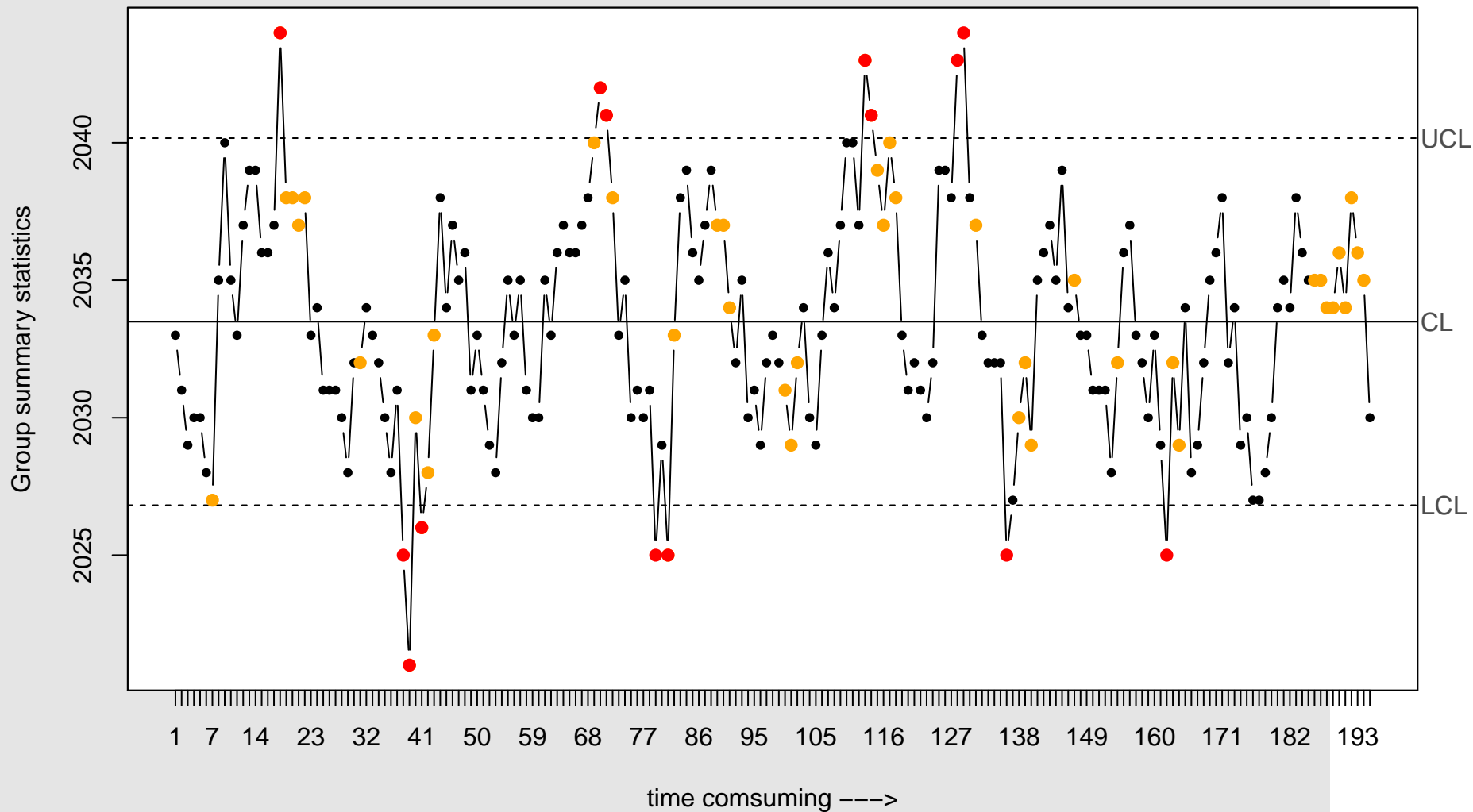


Number of groups = 195  
Center = 2033.815  
StdDev = 2.161475

LCL = 2027.331  
UCL = 2040.3

Number beyond limits = 21  
Number violating runs = 46

# 92th column point of this product



Number of groups = 195

Center = 2033.492

StdDev = 2.225451

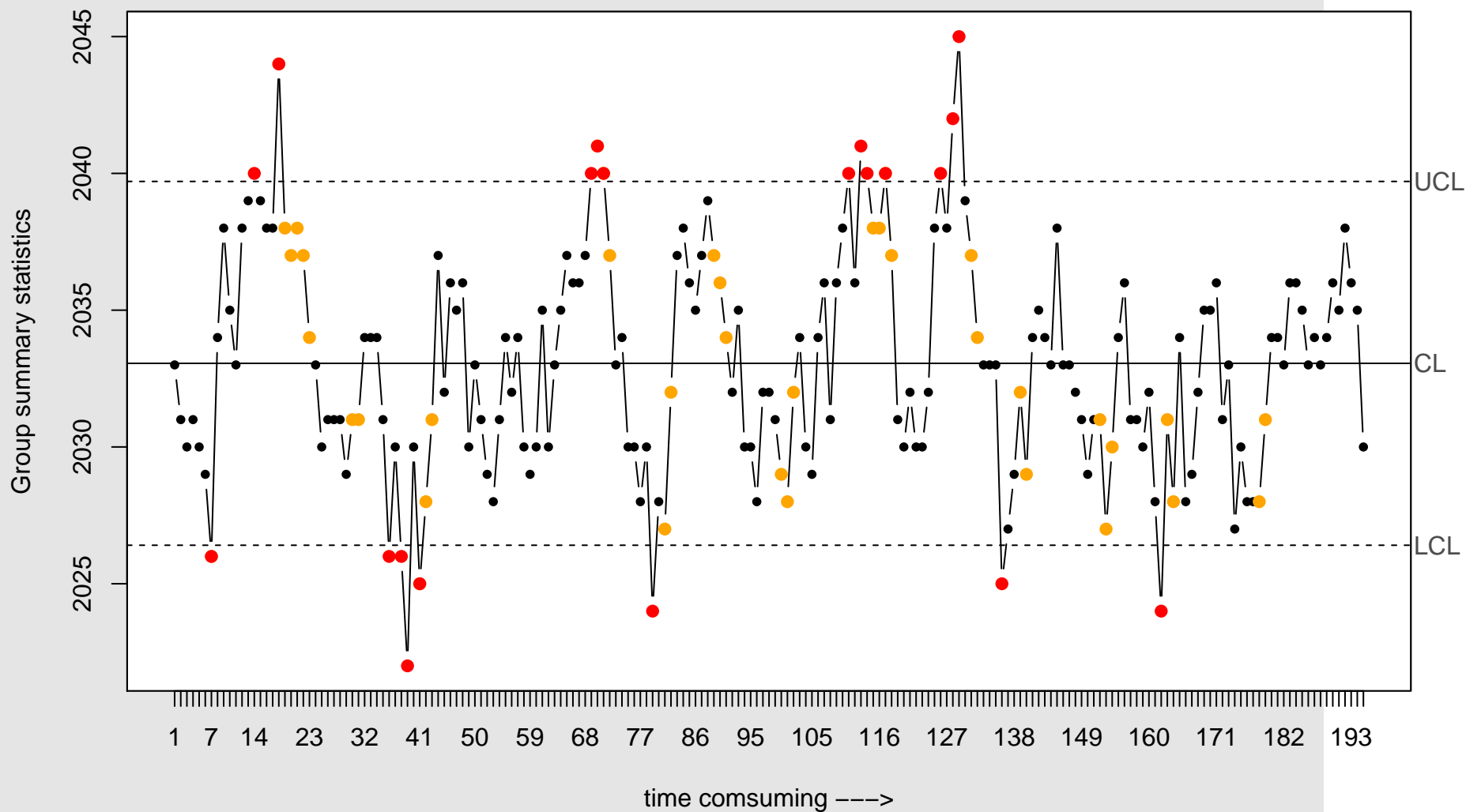
LCL = 2026.816

UCL = 2040.169

Number beyond limits = 14

Number violating runs = 47

# 93th column point of this product



Number of groups = 195

Center = 2033.056

StdDev = 2.216312

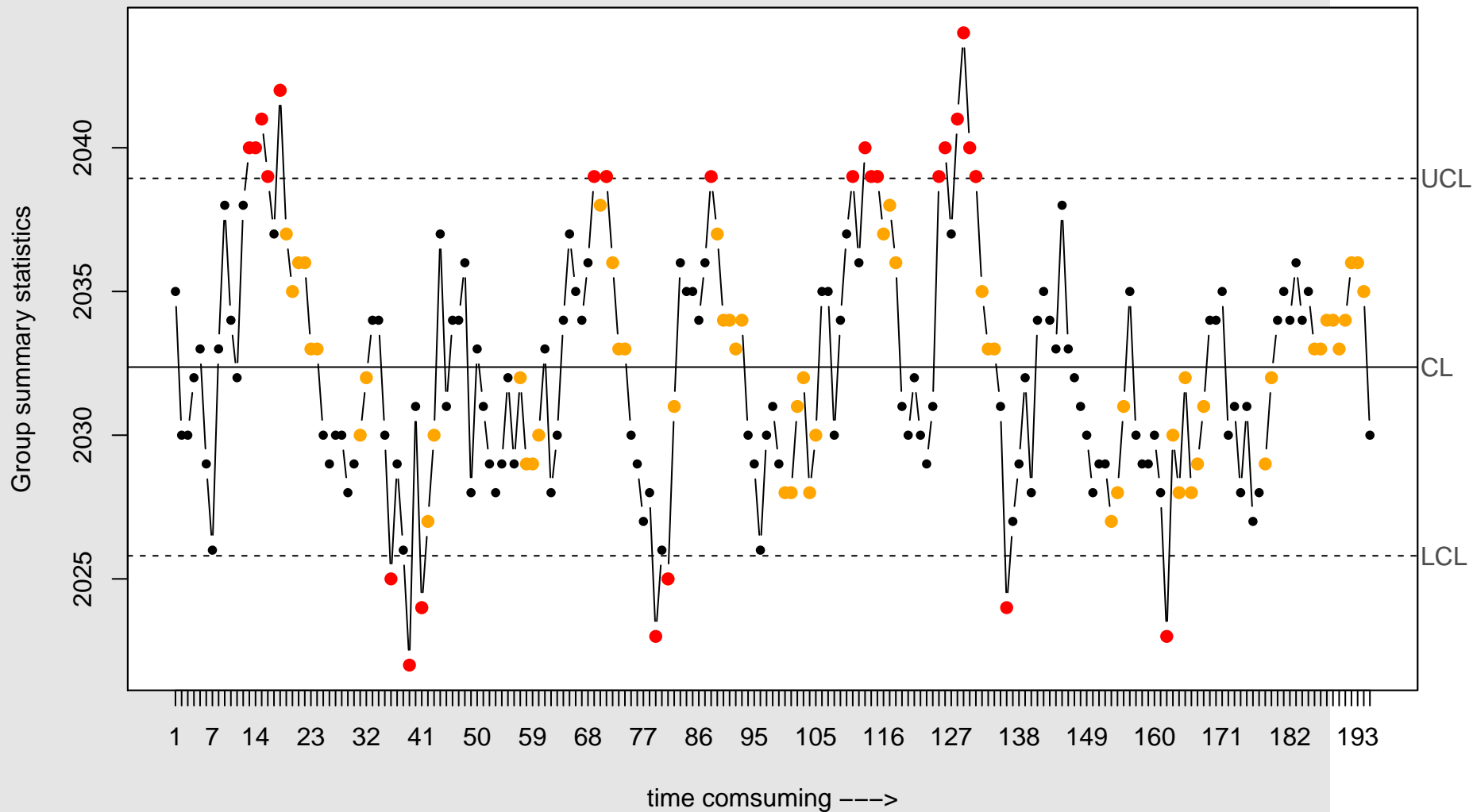
LCL = 2026.407

UCL = 2039.705

Number beyond limits = 20

Number violating runs = 38

# 94th column point of this product



Number of groups = 195

Center = 2032.369

StdDev = 2.188894

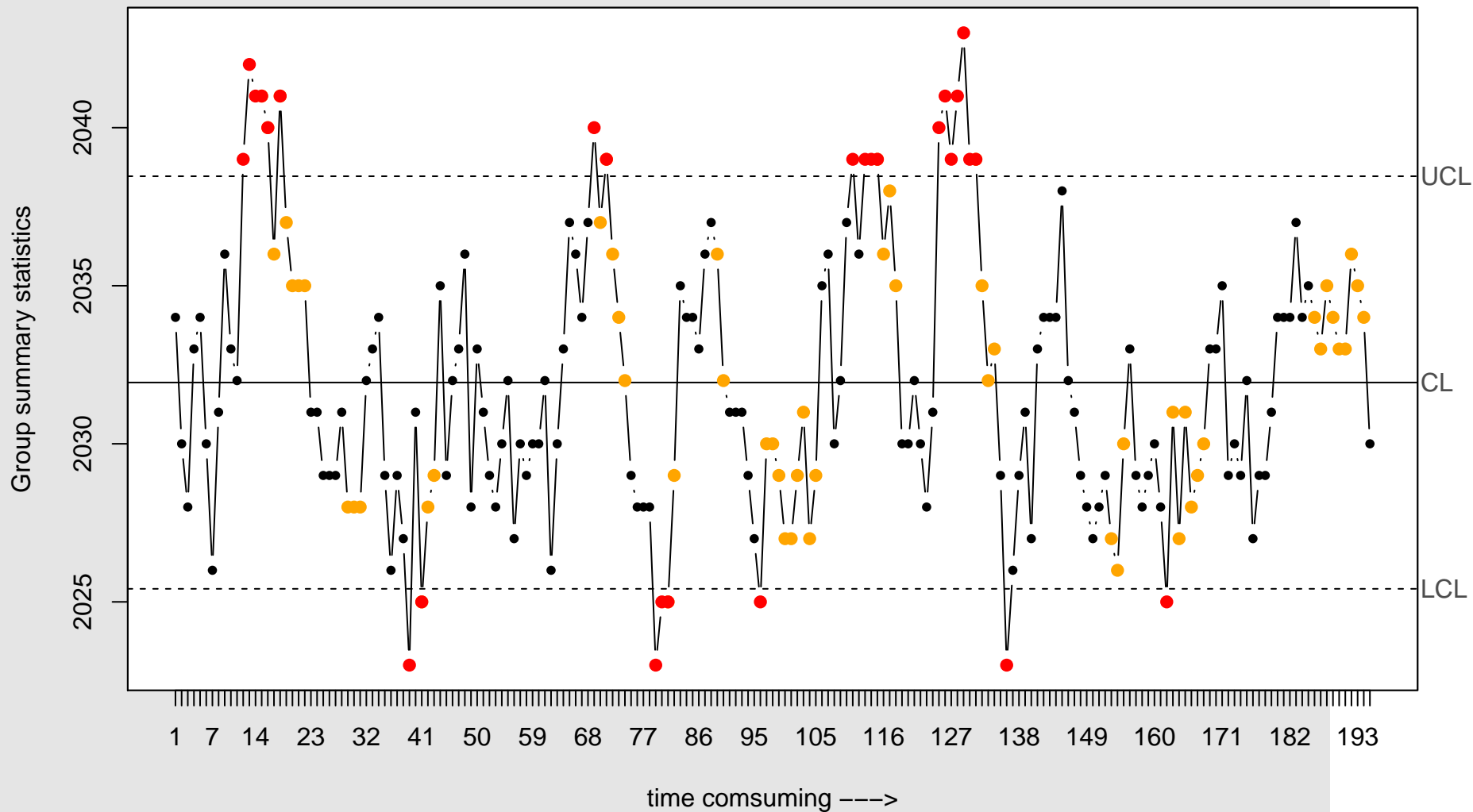
LCL = 2025.803

UCL = 2038.936

Number beyond limits = 25

Number violating runs = 62

# 95th column point of this product



Number of groups = 195

Center = 2031.938

StdDev = 2.175185

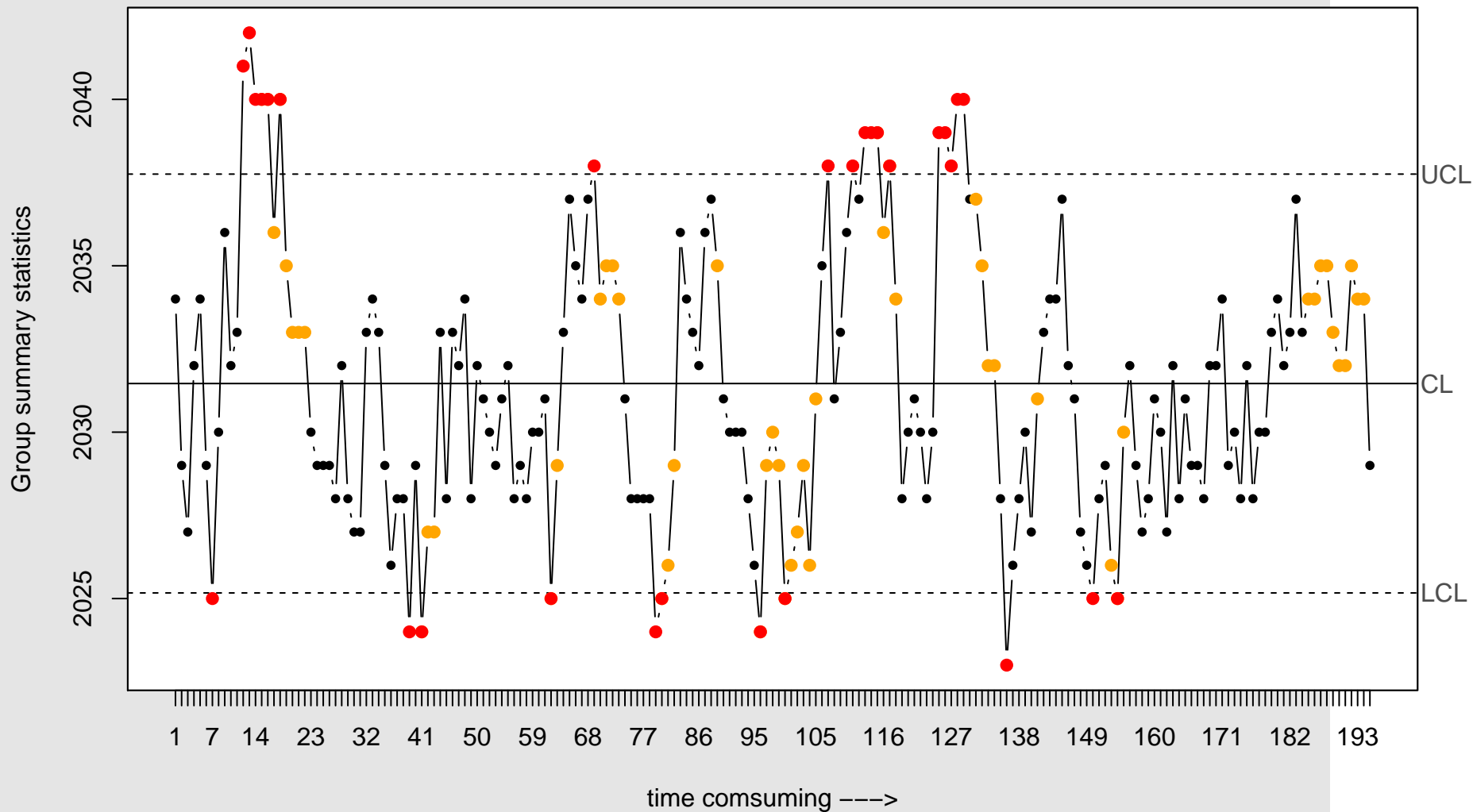
LCL = 2025.413

UCL = 2038.464

Number beyond limits = 27

Number violating runs = 58

# 96th column point of this product



Number of groups = 195

Center = 2031.462

StdDev = 2.097499

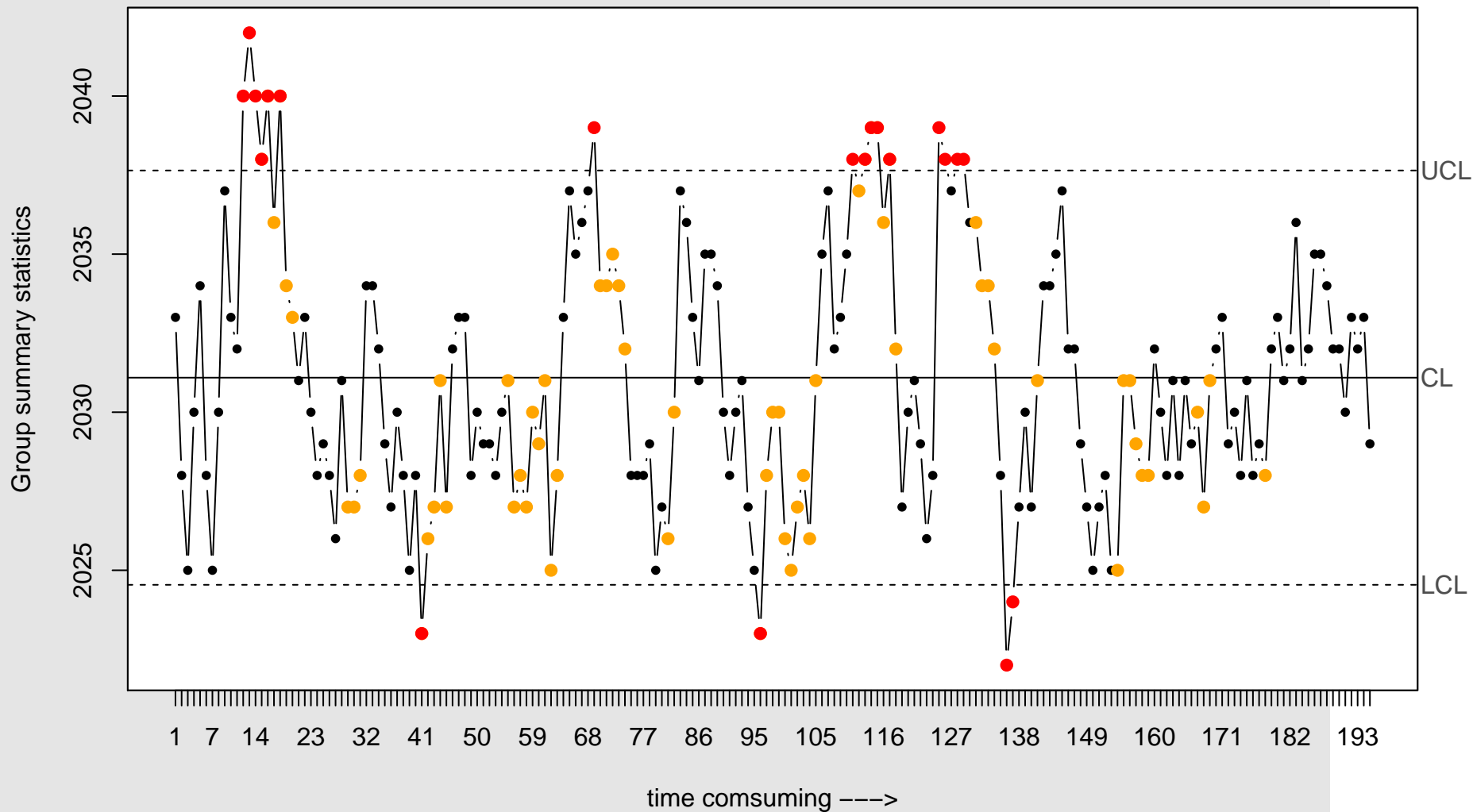
LCL = 2025.169

UCL = 2037.754

Number beyond limits = 29

Number violating runs = 53

# 97th column point of this product



Number of groups = 195

Center = 2031.092

StdDev = 2.184324

LCL = 2024.539

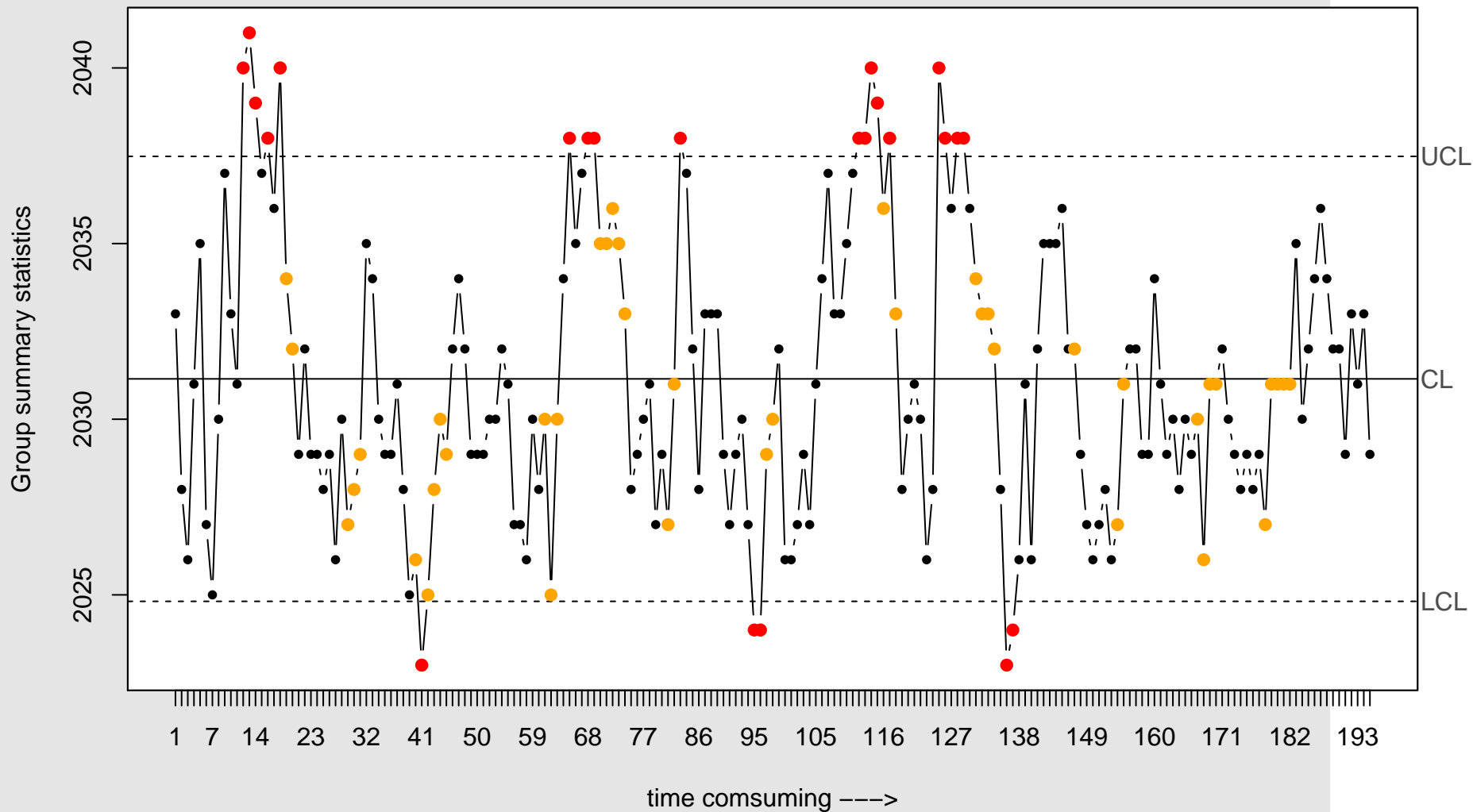
UCL = 2037.645

Number beyond limits = 20

Number violating runs = 62



# 98th column point of this product



Number of groups = 195

Center = 2031.149

StdDev = 2.111209

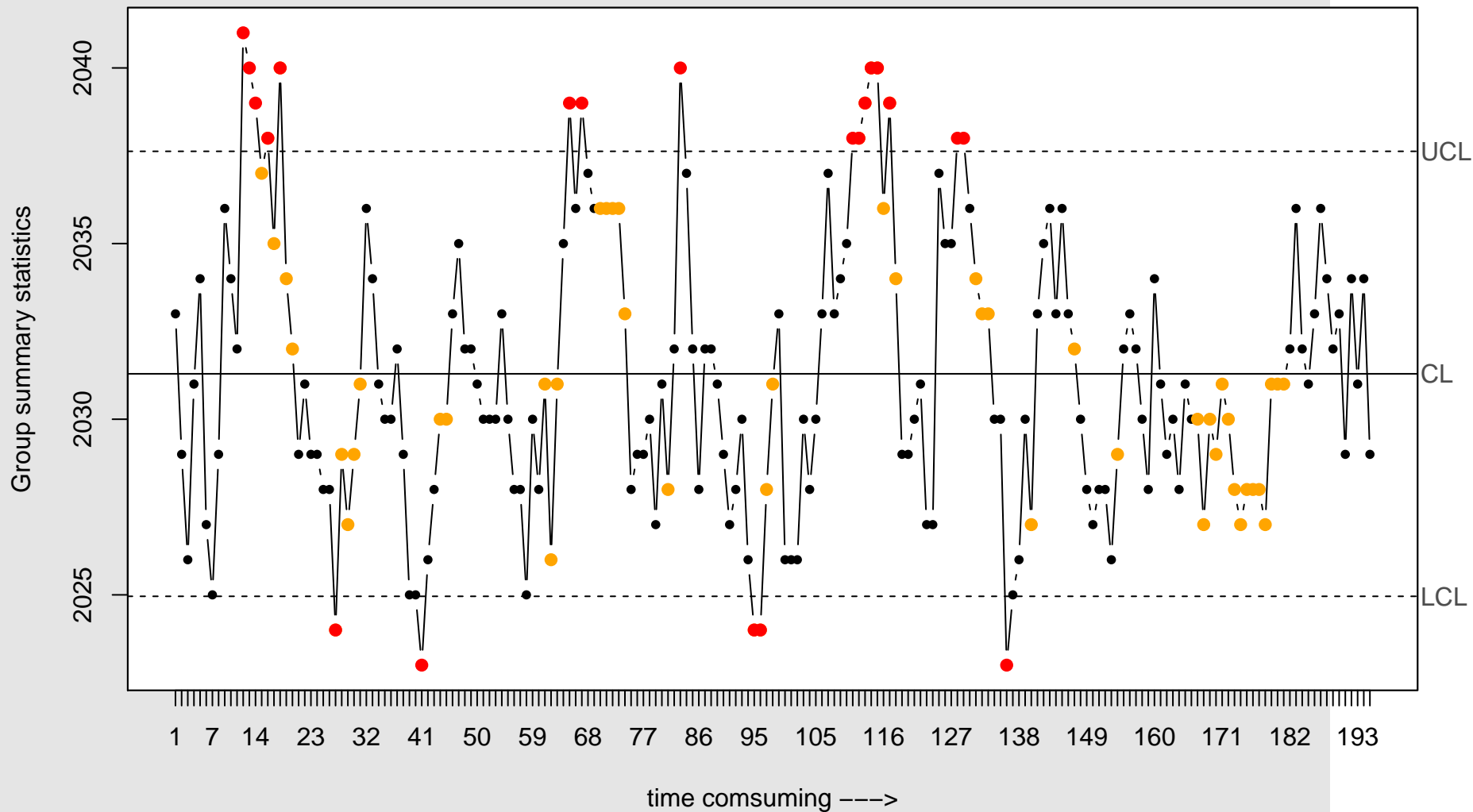
LCL = 2024.815

UCL = 2037.482

Number beyond limits = 23

Number violating runs = 48

# 99th column point of this product

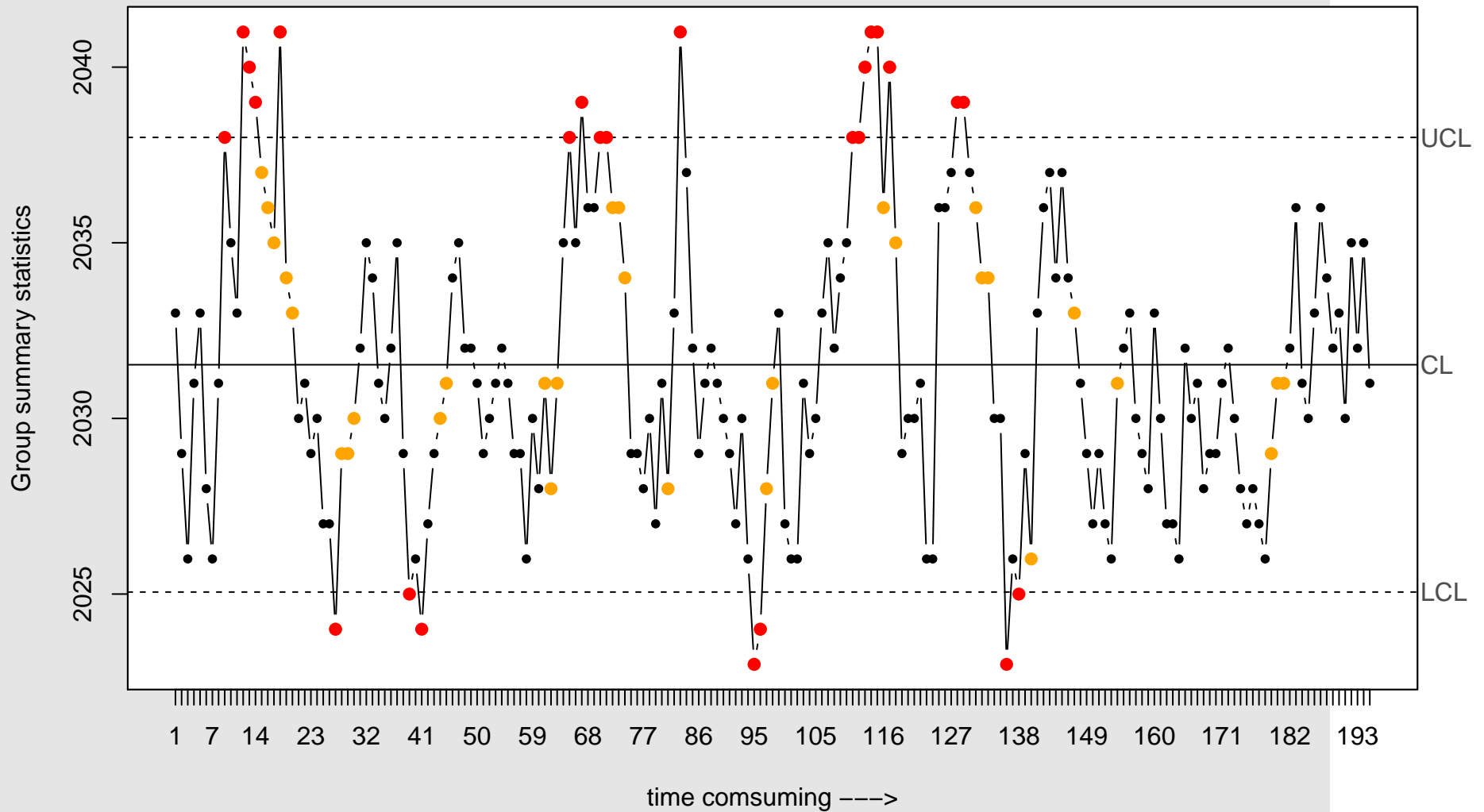


Number of groups = 195  
Center = 2031.292  
StdDev = 2.111209

LCL = 2024.959  
UCL = 2037.626

Number beyond limits = 21  
Number violating runs = 54

# 100th column point of this product

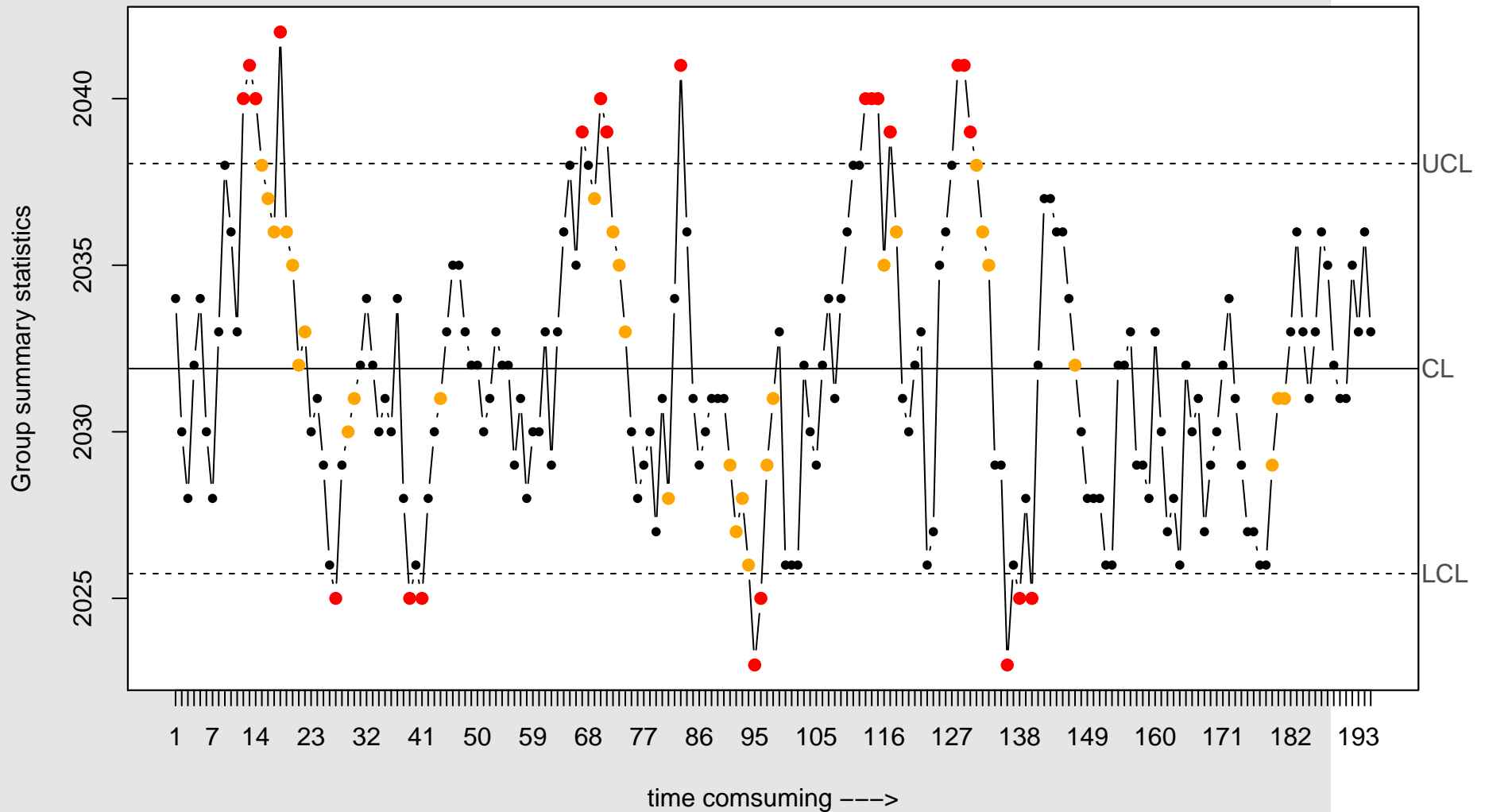


Number of groups = 195  
Center = 2031.528  
StdDev = 2.156906

LCL = 2025.057  
UCL = 2037.999

Number beyond limits = 25  
Number violating runs = 41

# 101th column point of this product

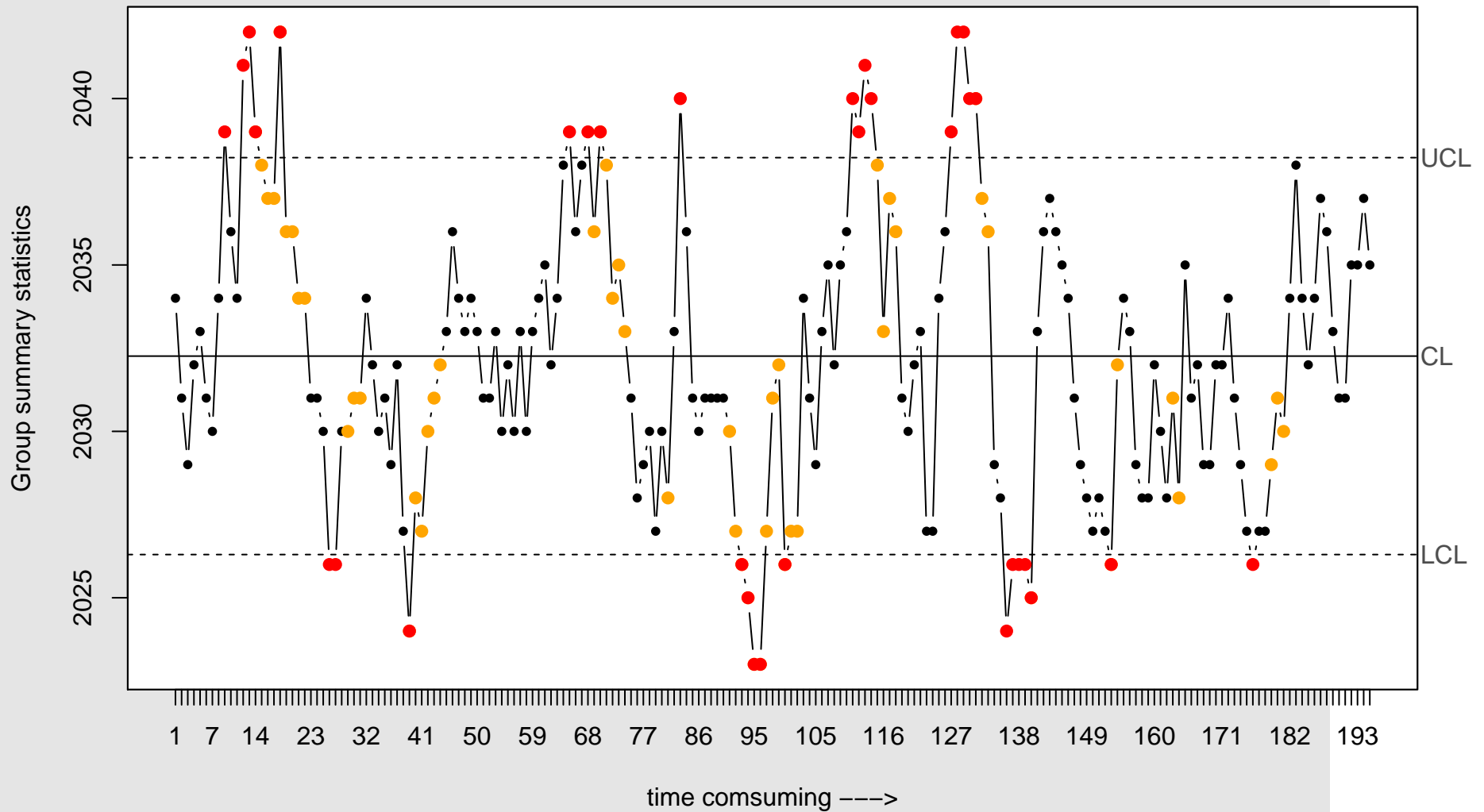


Number of groups = 195  
Center = 2031.897  
StdDev = 2.051802

LCL = 2025.742  
UCL = 2038.053

Number beyond limits = 23  
Number violating runs = 39

# 102th column point of this product

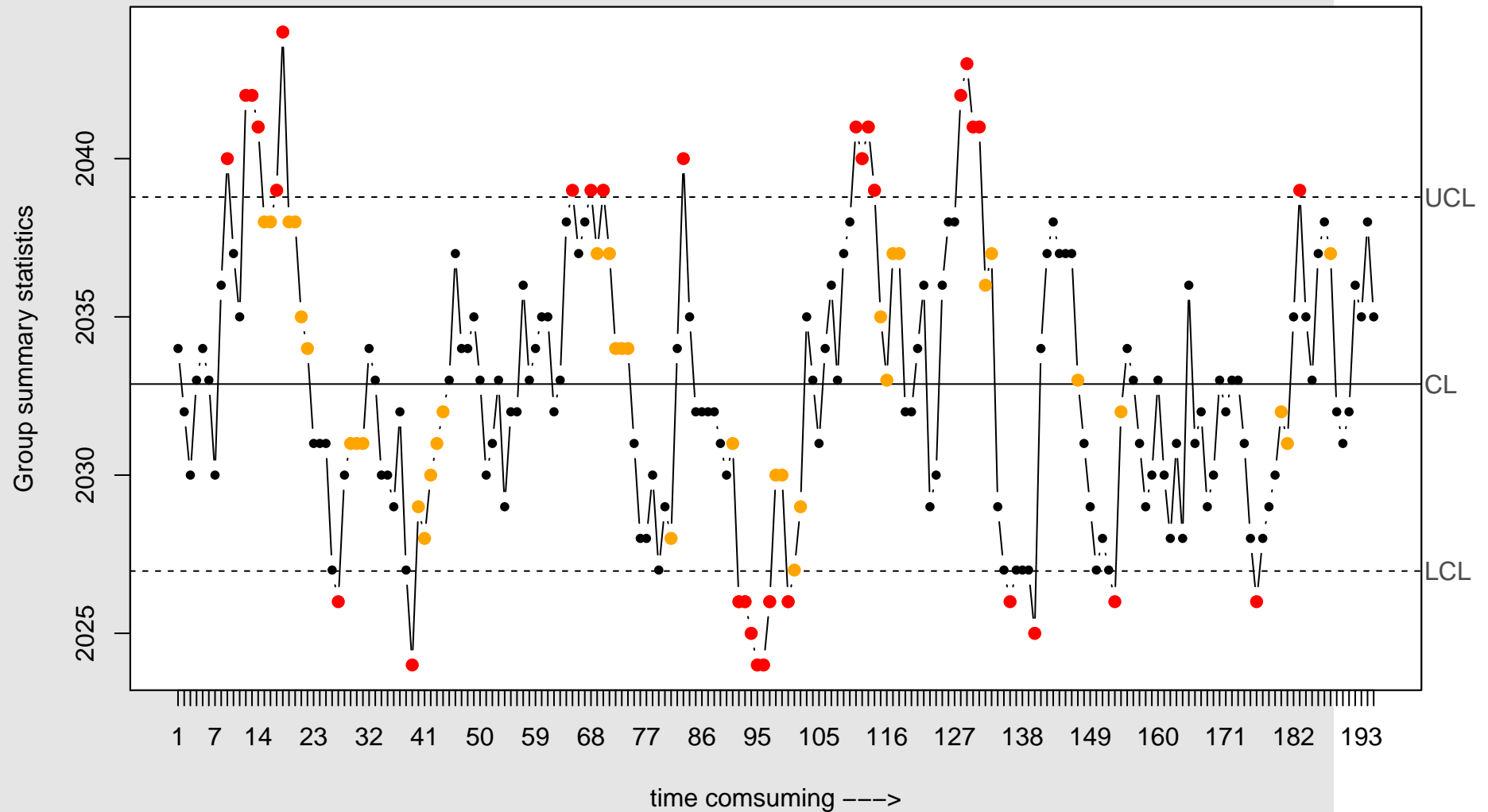


Number of groups = 195  
Center = 2032.262  
StdDev = 1.987826

LCL = 2026.298  
UCL = 2038.225

Number beyond limits = 33  
Number violating runs = 52

# 103th column point of this product

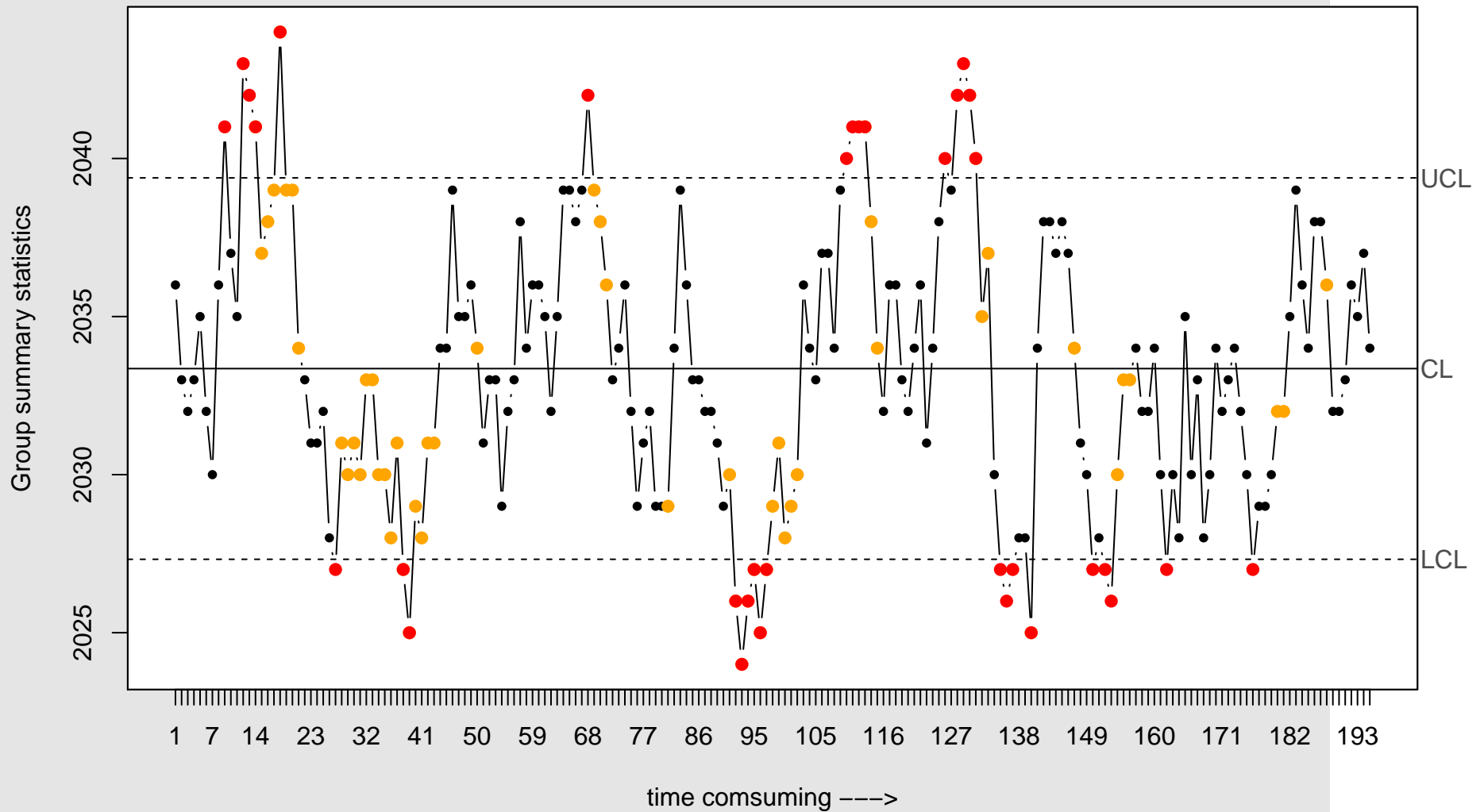


Number of groups = 195  
 Center = 2032.877  
 StdDev = 1.969547

LCL = 2026.968  
 UCL = 2038.786

Number beyond limits = 32  
 Number violating runs = 52

# 104th column point of this product



Number of groups = 195

Center = 2033.354

StdDev = 2.010675

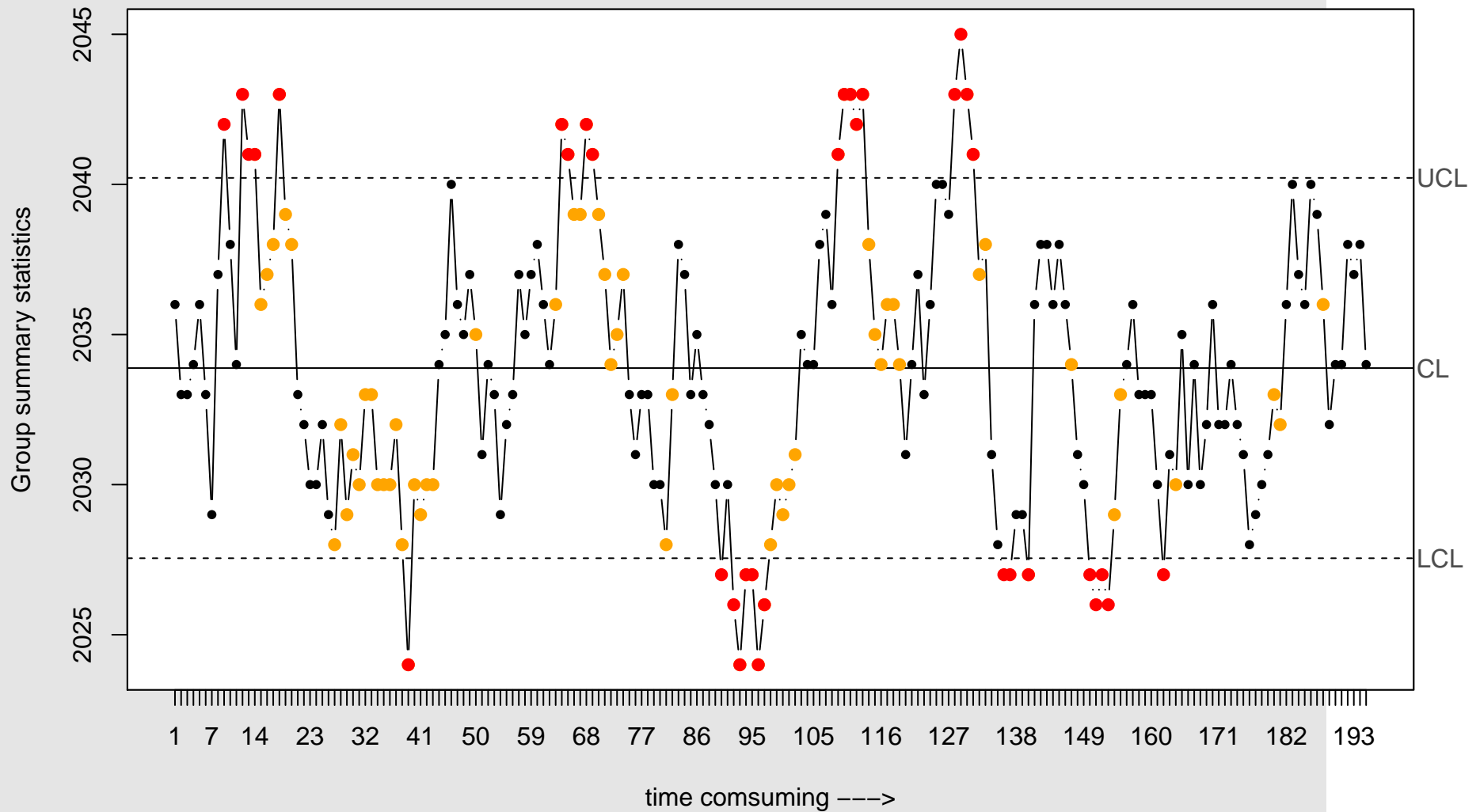
LCL = 2027.322

UCL = 2039.386

Number beyond limits = 33

Number violating runs = 57

# 105th column point of this product



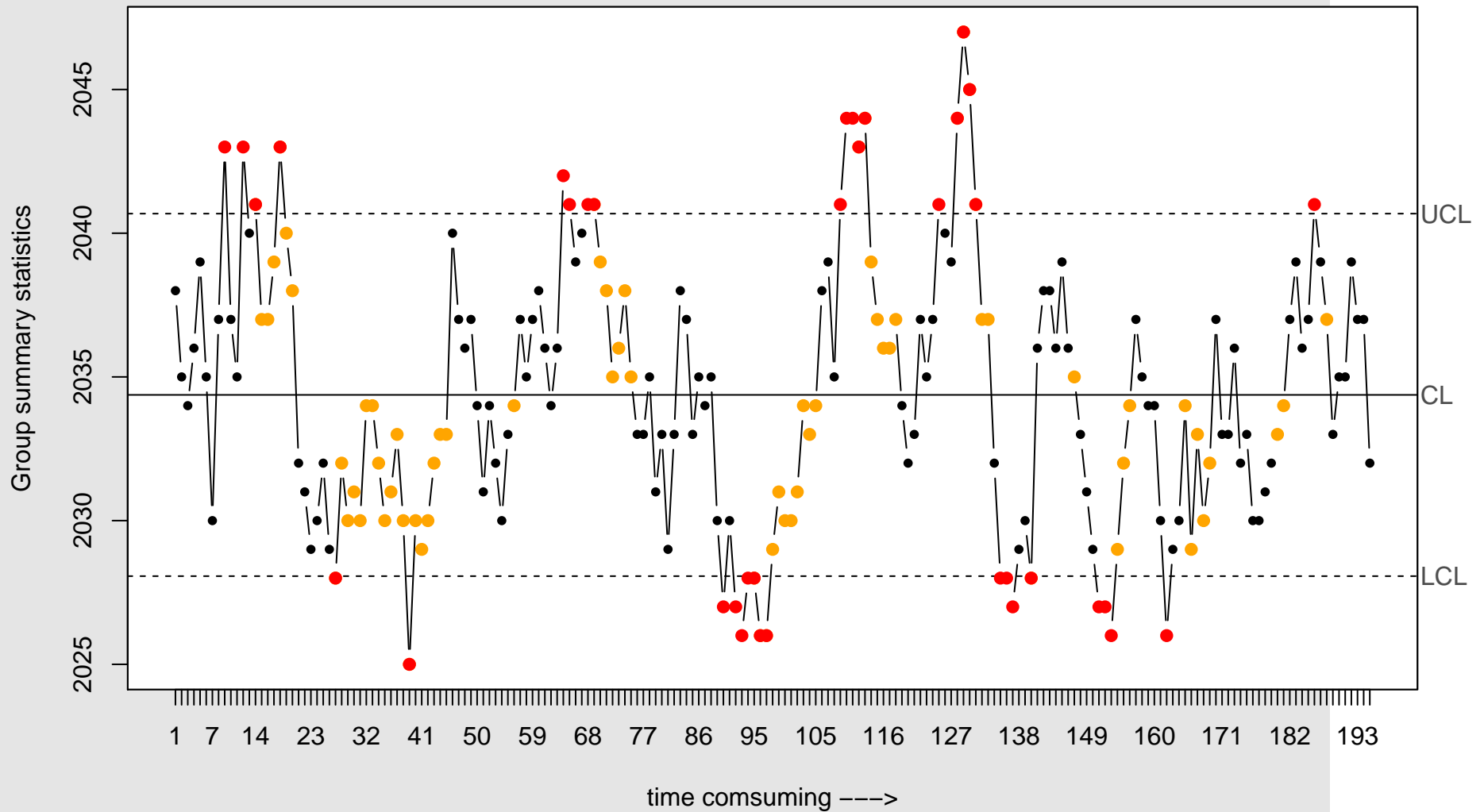
Number of groups = 195  
Center = 2033.882  
StdDev = 2.111209

LCL = 2027.548  
UCL = 2040.216

Number beyond limits = 34  
Number violating runs = 72



# 106th column point of this product



Number of groups = 195

Center = 2034.374

StdDev = 2.102069

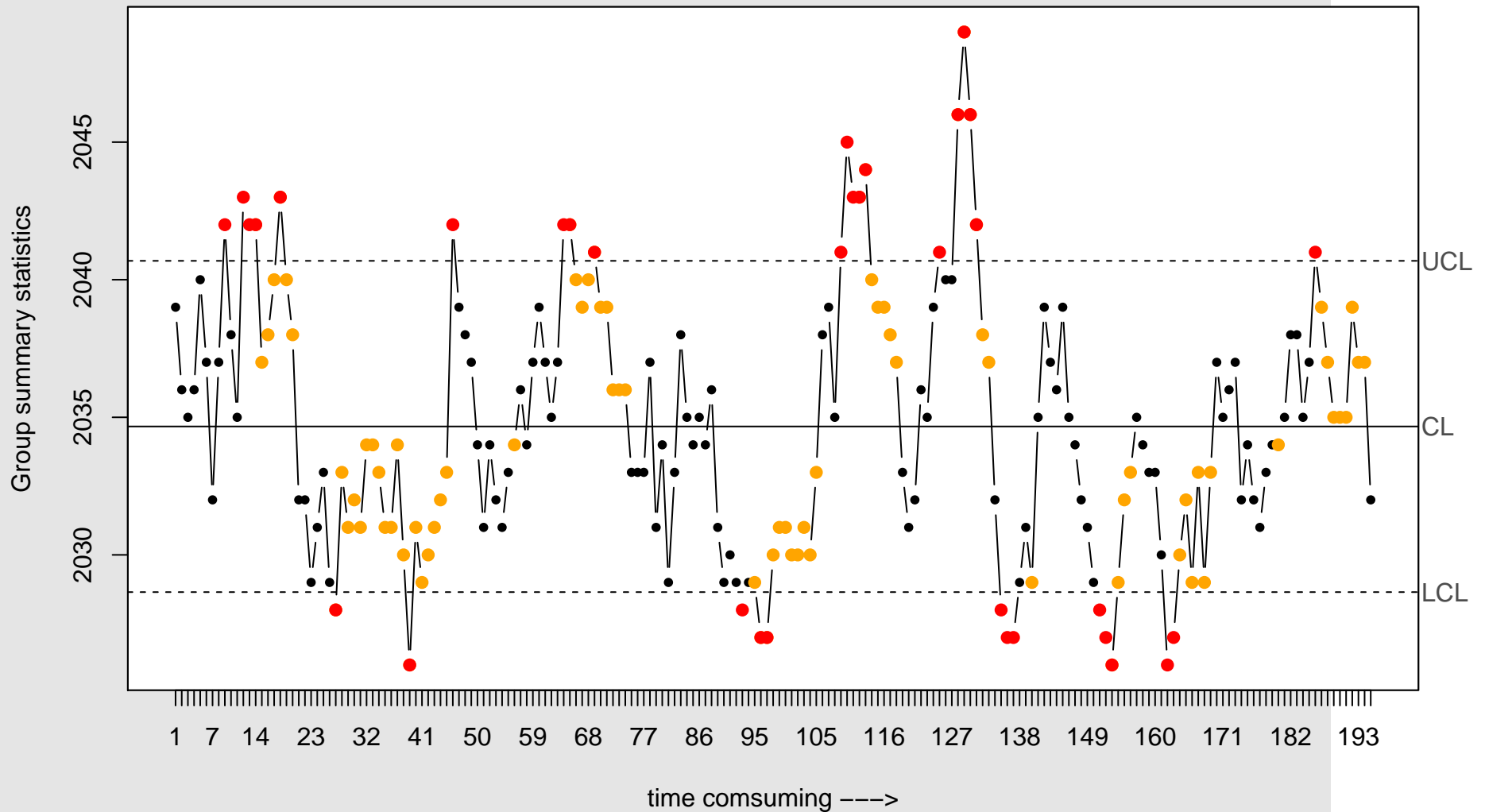
LCL = 2028.068

UCL = 2040.681

Number beyond limits = 36

Number violating runs = 71

## 107th column point of this product



Number of groups = 195

Center = 2034.667

StdDev = 2.006105

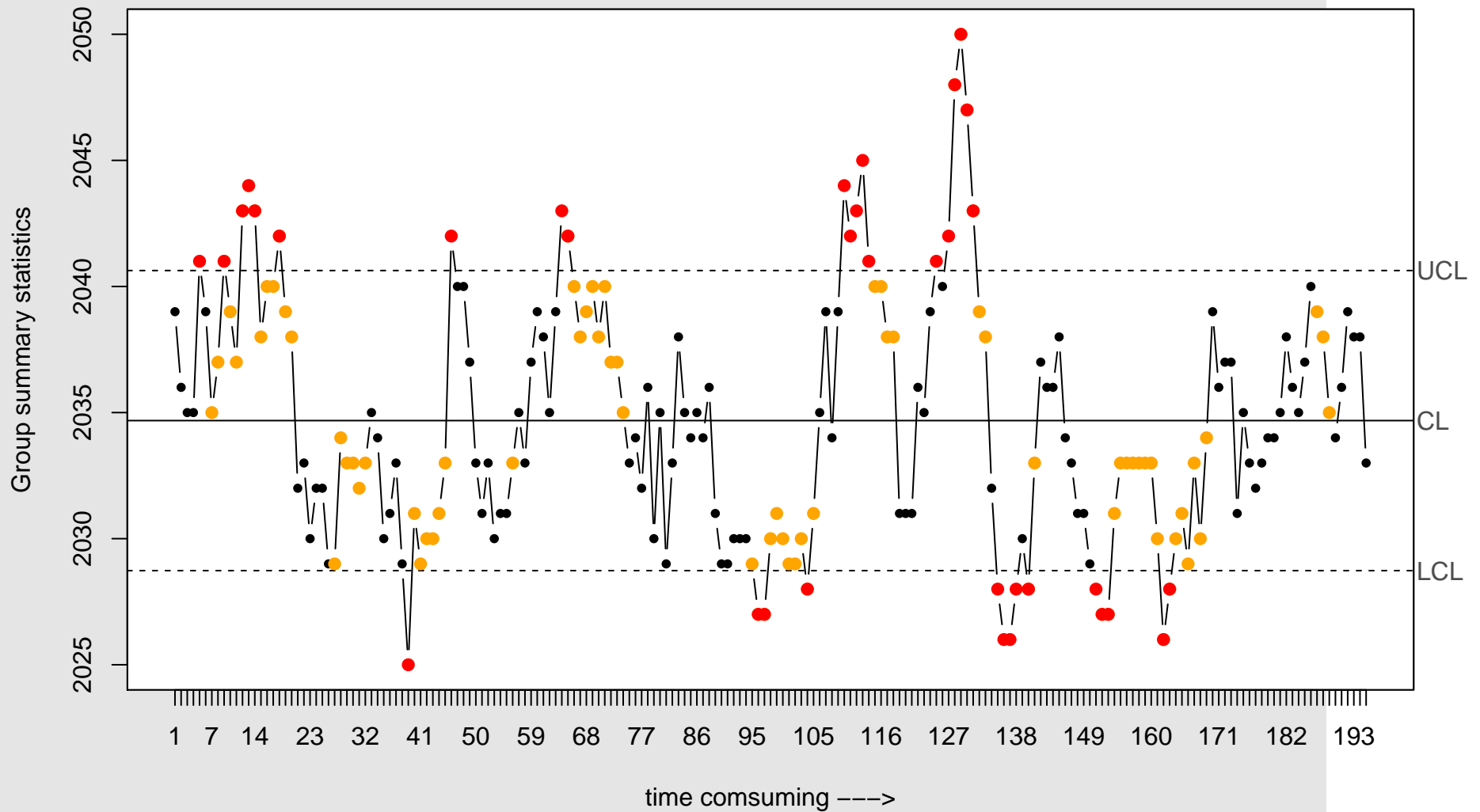
LCL = 2028.648

UCL = 2040.685

Number beyond limits = 33

Number violating runs = 81

# 108th column point of this product

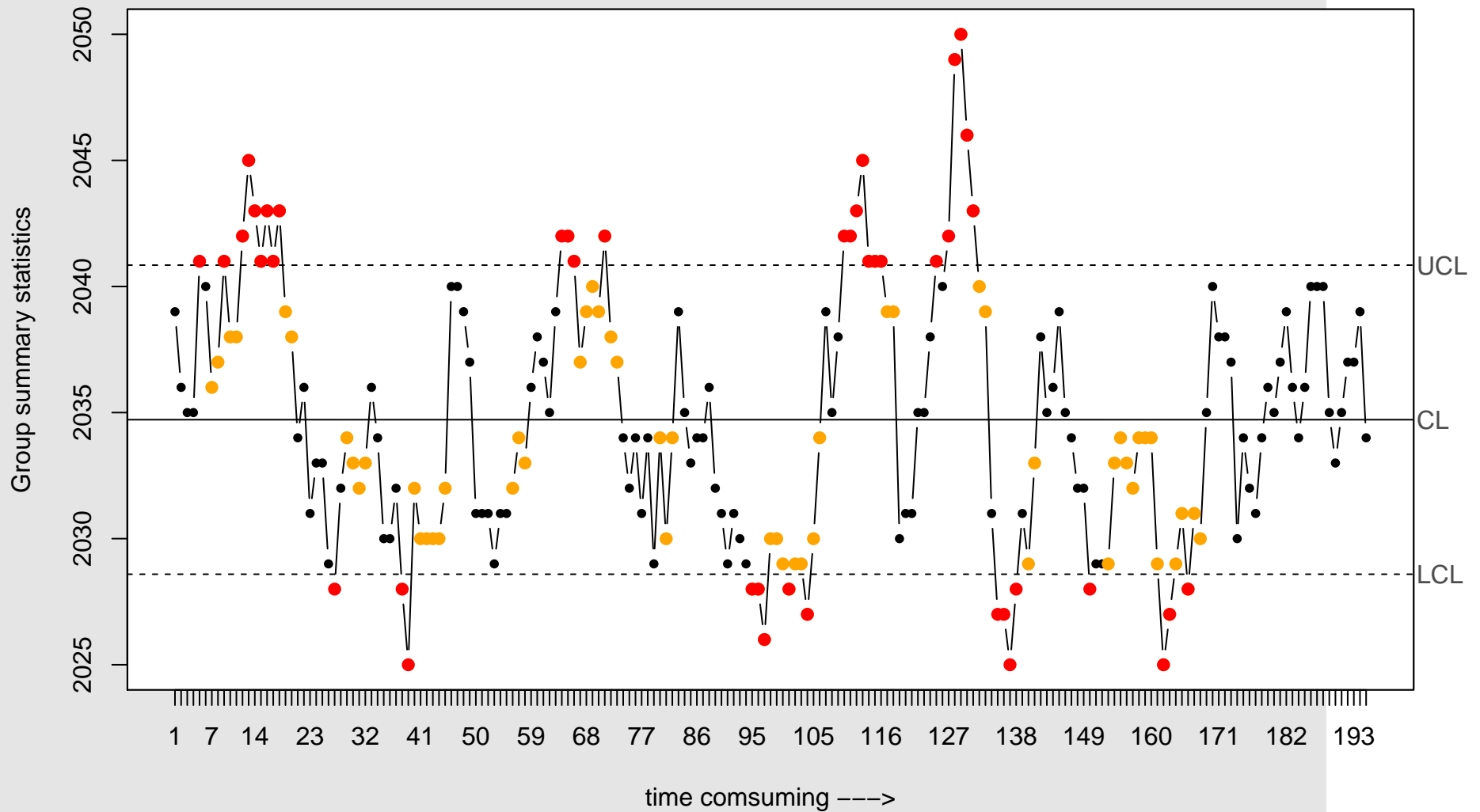


Number of groups = 195  
 Center = 2034.682  
 StdDev = 1.983257

LCL = 2028.732  
 UCL = 2040.632

Number beyond limits = 34  
 Number violating runs = 81

# 109th column point of this product

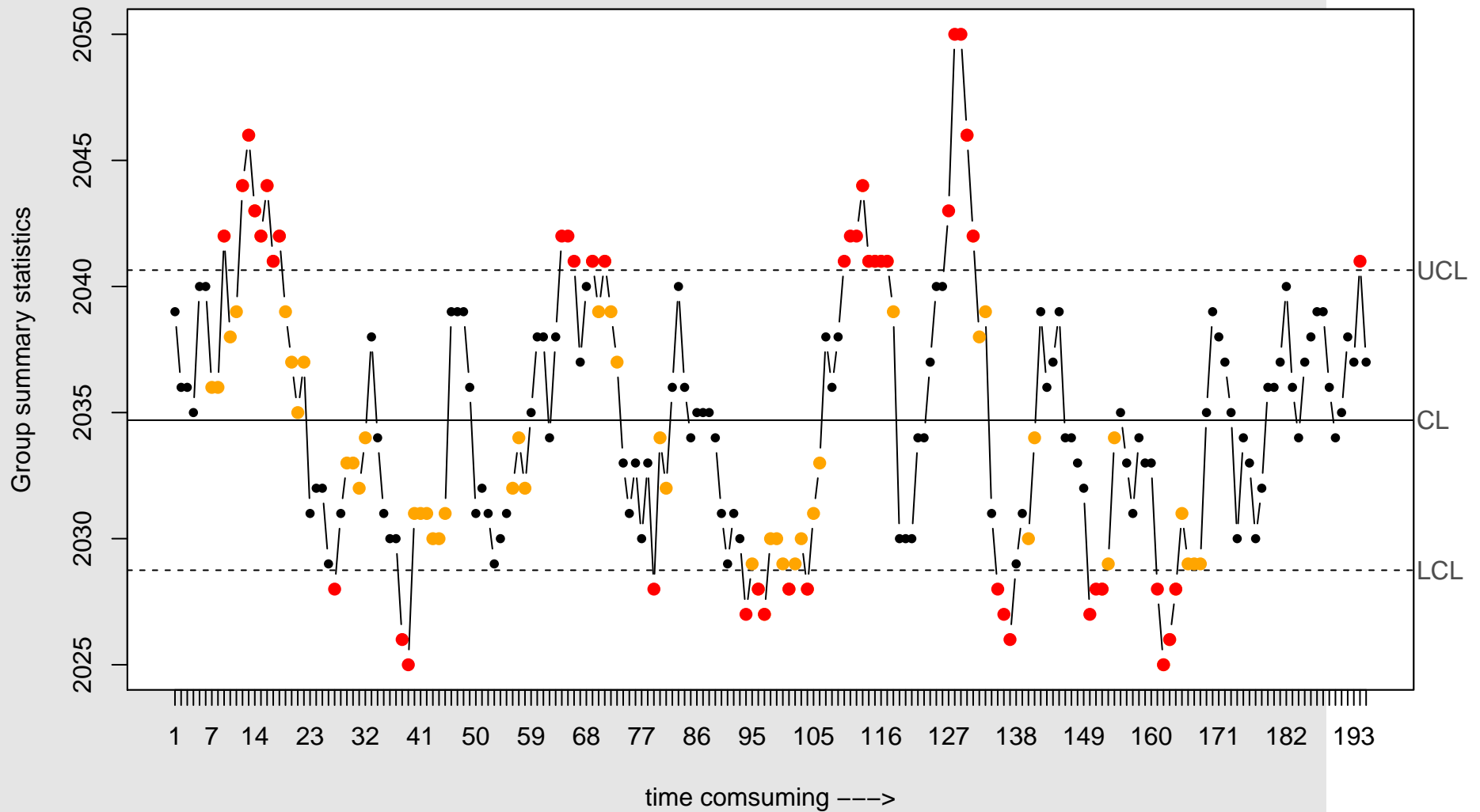


Number of groups = 195  
 Center = 2034.718  
 StdDev = 2.042663

LCL = 2028.59  
 UCL = 2040.846

Number beyond limits = 42  
 Number violating runs = 81

# 110th column point of this product

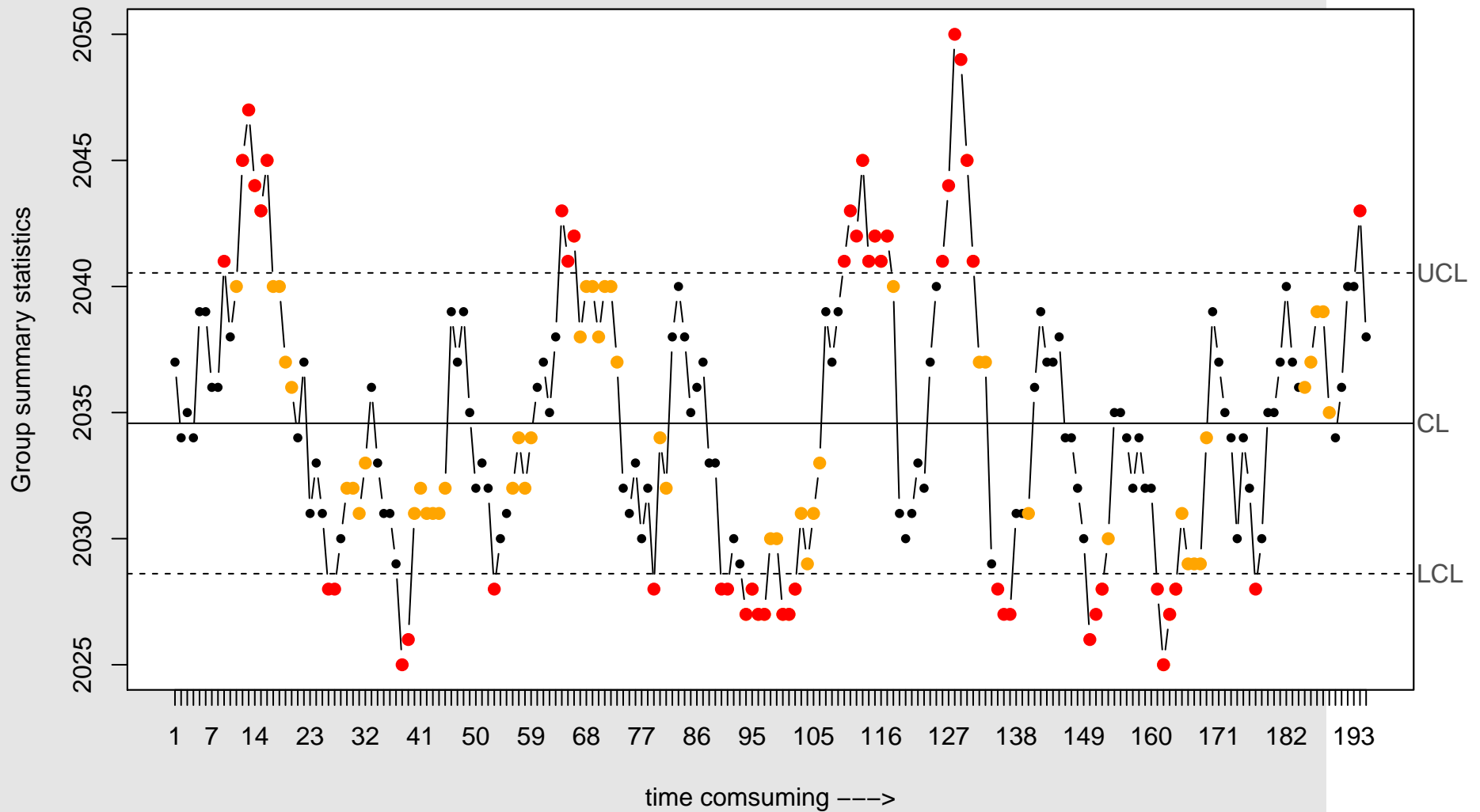


Number of groups = 195  
Center = 2034.697  
StdDev = 1.983257

LCL = 2028.748  
UCL = 2040.647

Number beyond limits = 46  
Number violating runs = 70

# 111th column point of this product



Number of groups = 195

Center = 2034.574

StdDev = 1.987826

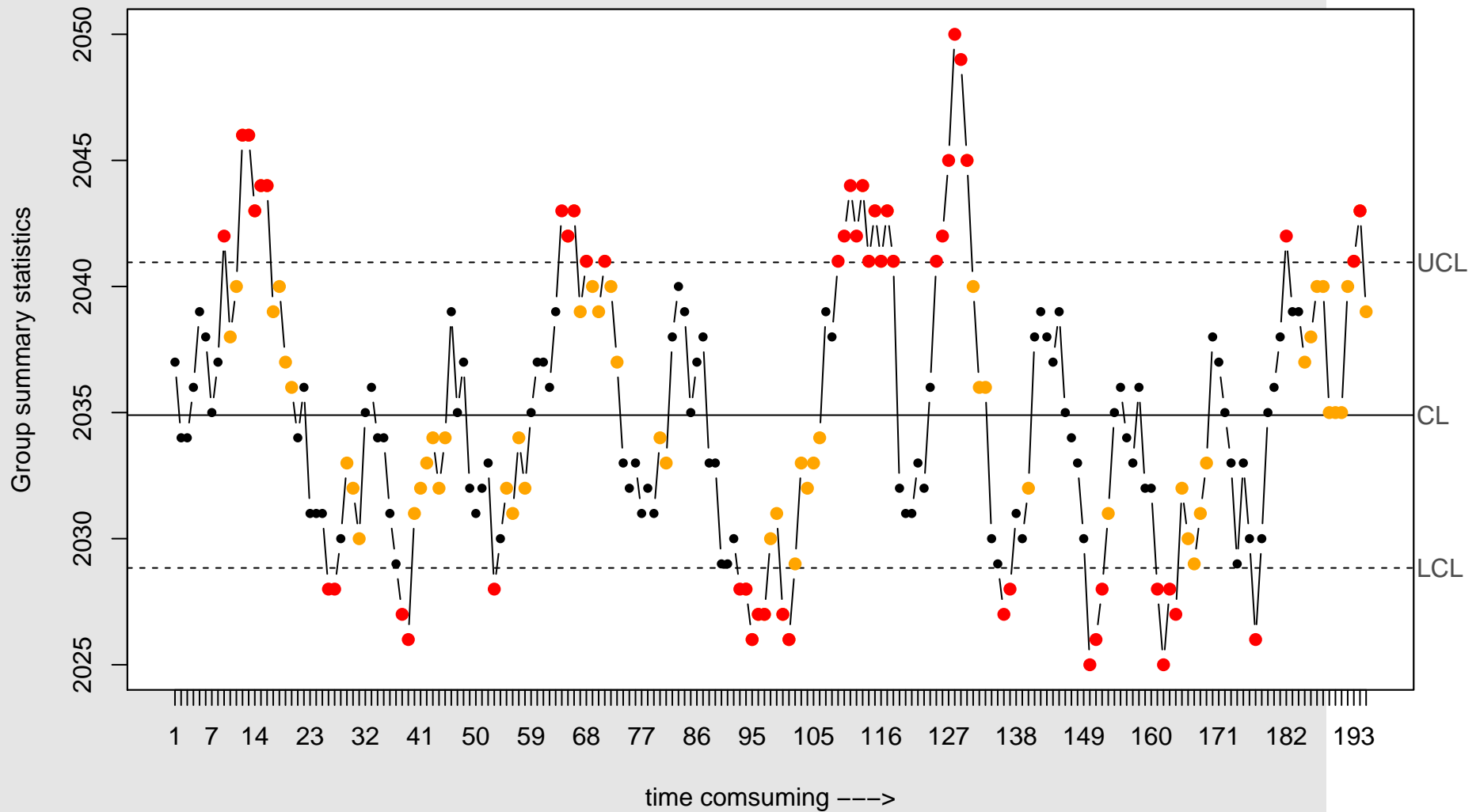
LCL = 2028.611

UCL = 2040.538

Number beyond limits = 50

Number violating runs = 73

# 112th column point of this product

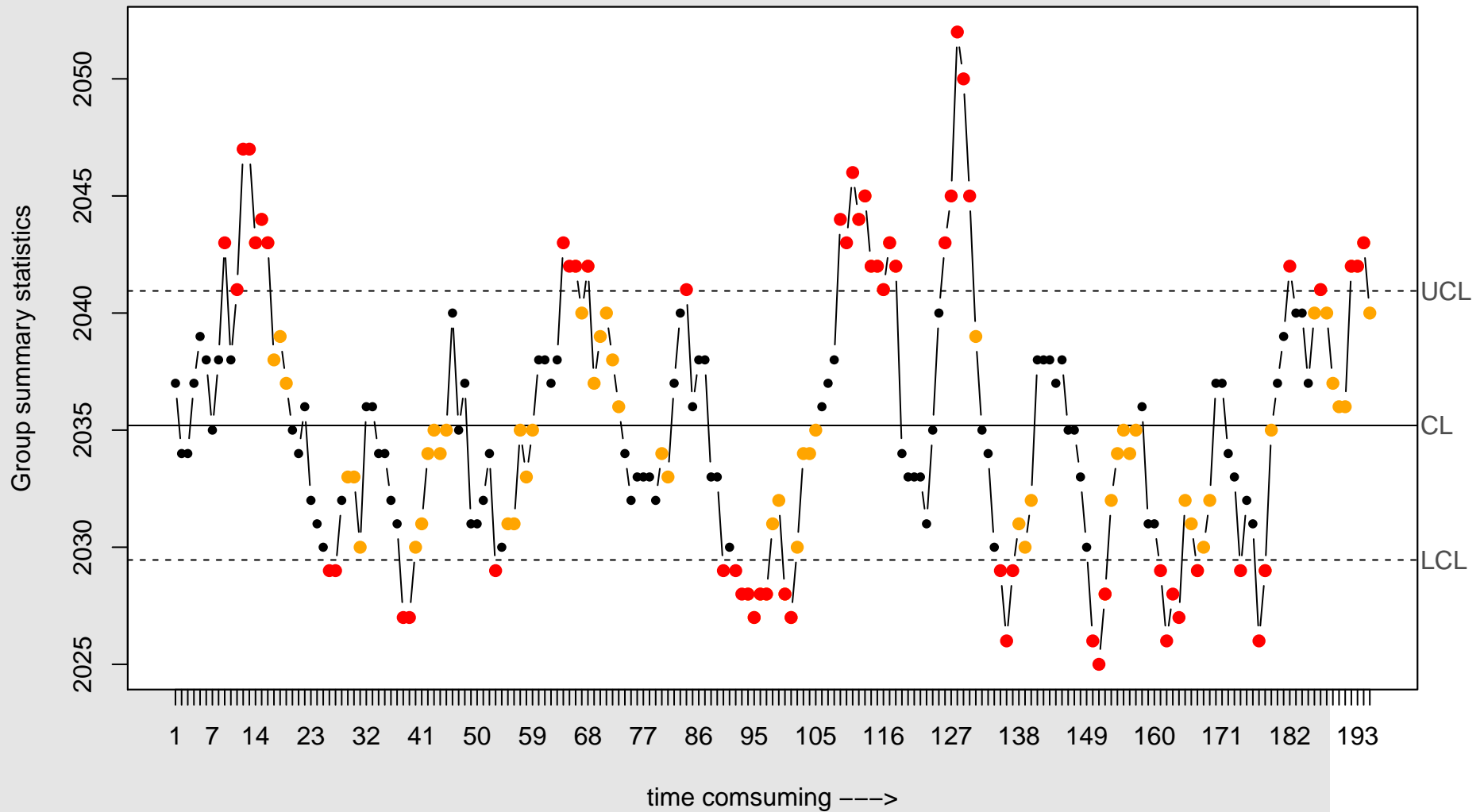


Number of groups = 195  
Center = 2034.897  
StdDev = 2.019814

LCL = 2028.838  
UCL = 2040.957

Number beyond limits = 52  
Number violating runs = 76

# 113th column point of this product



Number of groups = 195

Center = 2035.2

StdDev = 1.914711

LCL = 2029.456

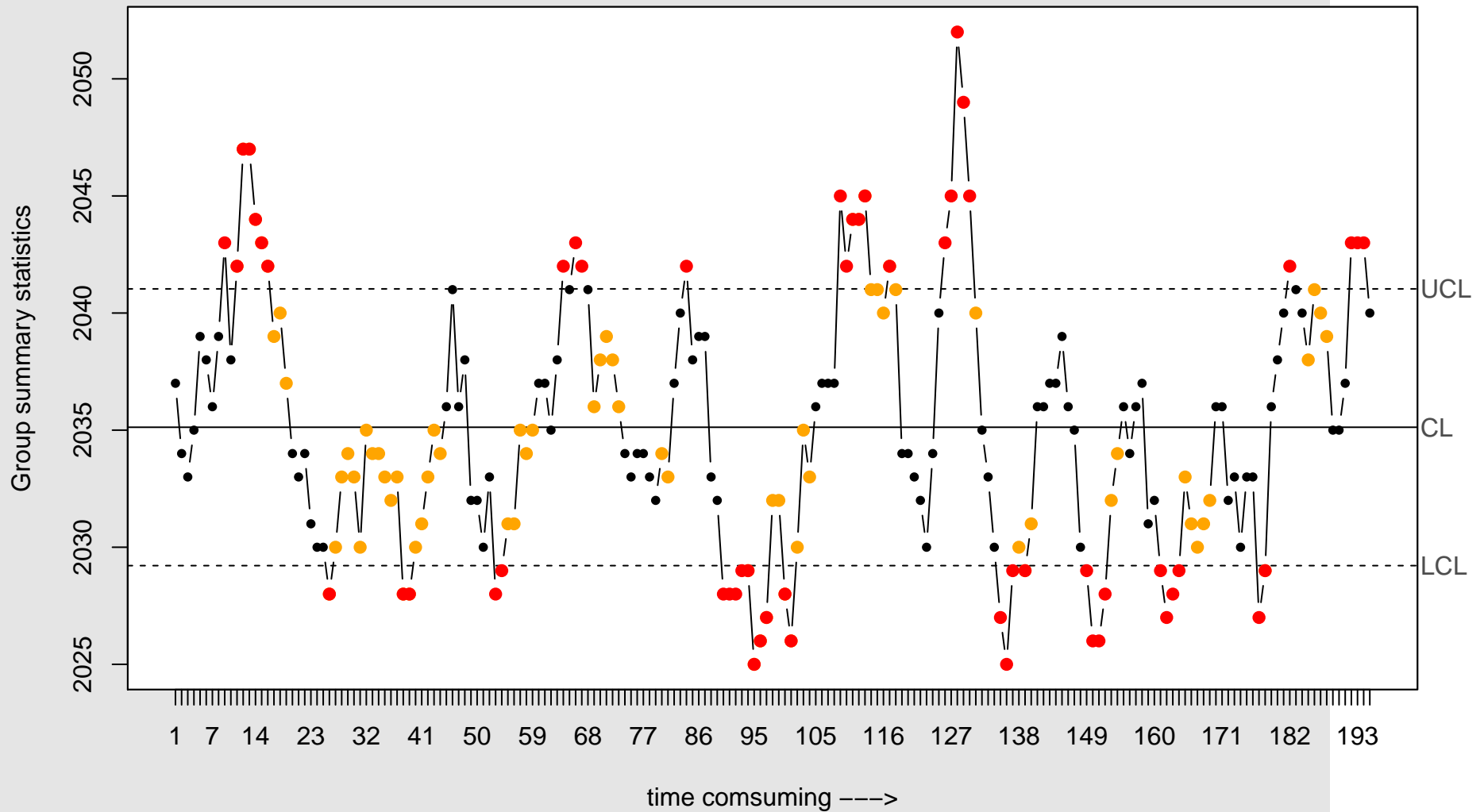
UCL = 2040.944

Number beyond limits = 60

Number violating runs = 76



# 114th column point of this product

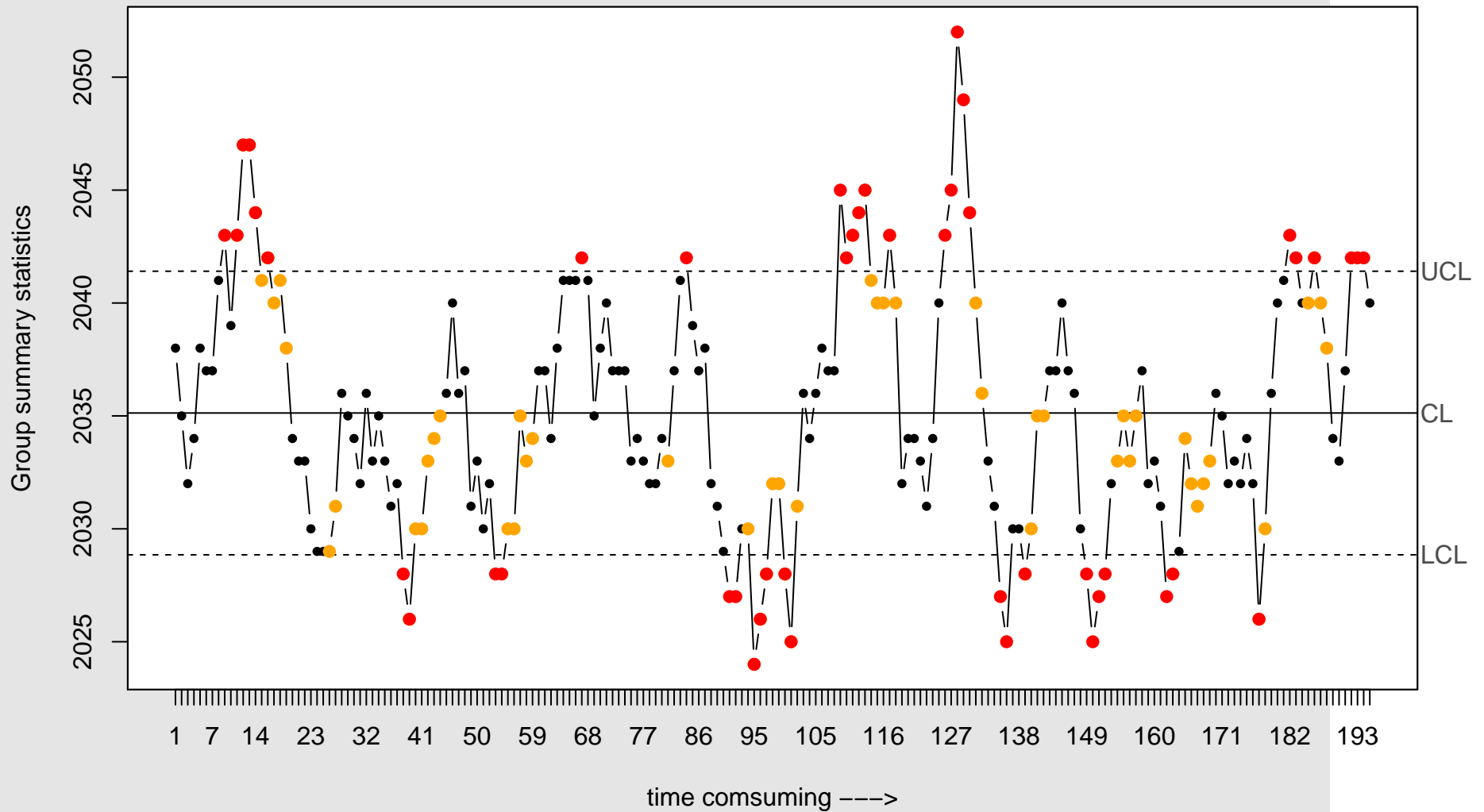


Number of groups = 195  
 Center = 2035.123  
 StdDev = 1.969547

LCL = 2029.214  
 UCL = 2041.032

Number beyond limits = 55  
 Number violating runs = 75

# 115th column point of this product



Number of groups = 195

Center = 2035.128

StdDev = 2.09293

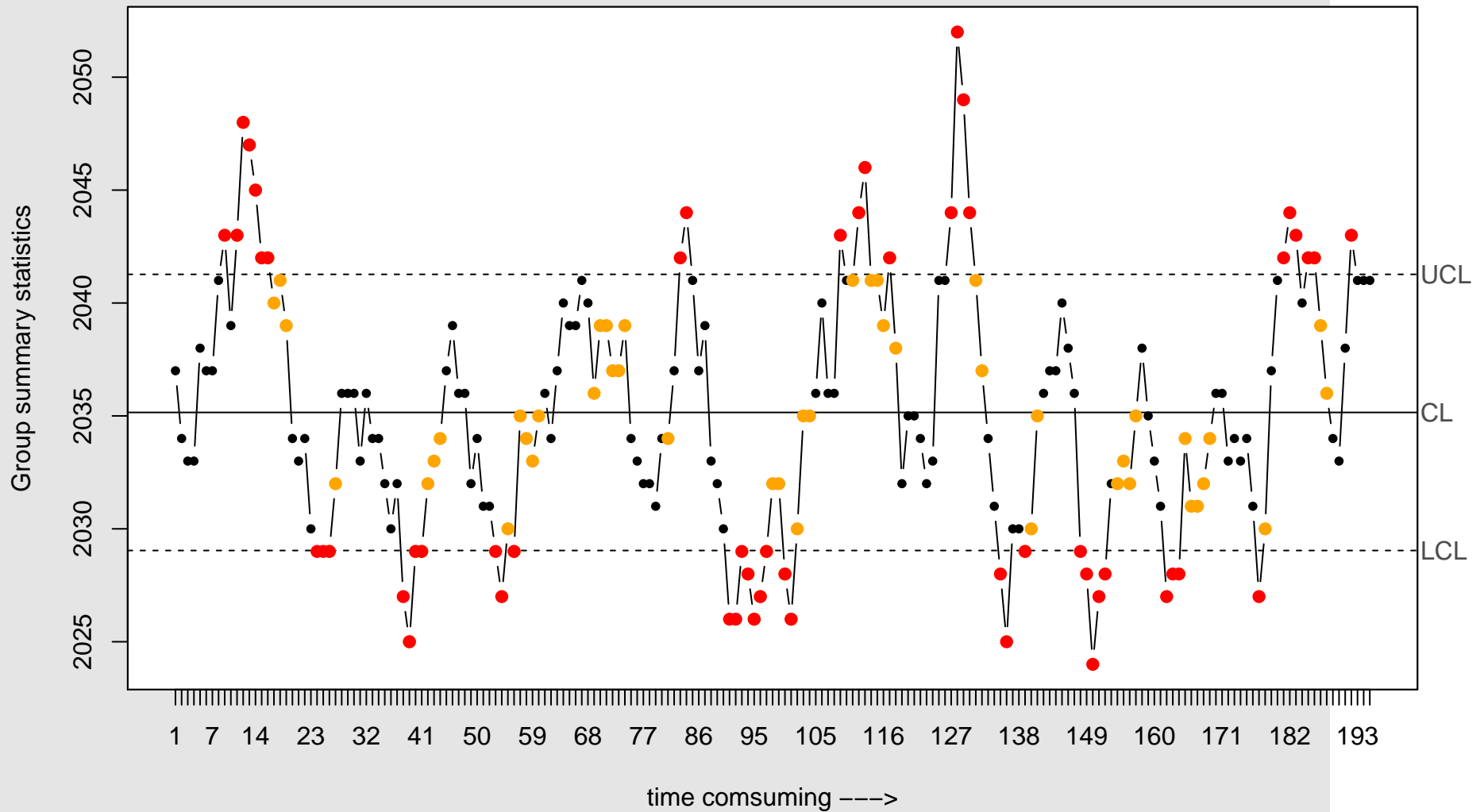
LCL = 2028.849

UCL = 2041.407

Number beyond limits = 46

Number violating runs = 61

# 116th column point of this product

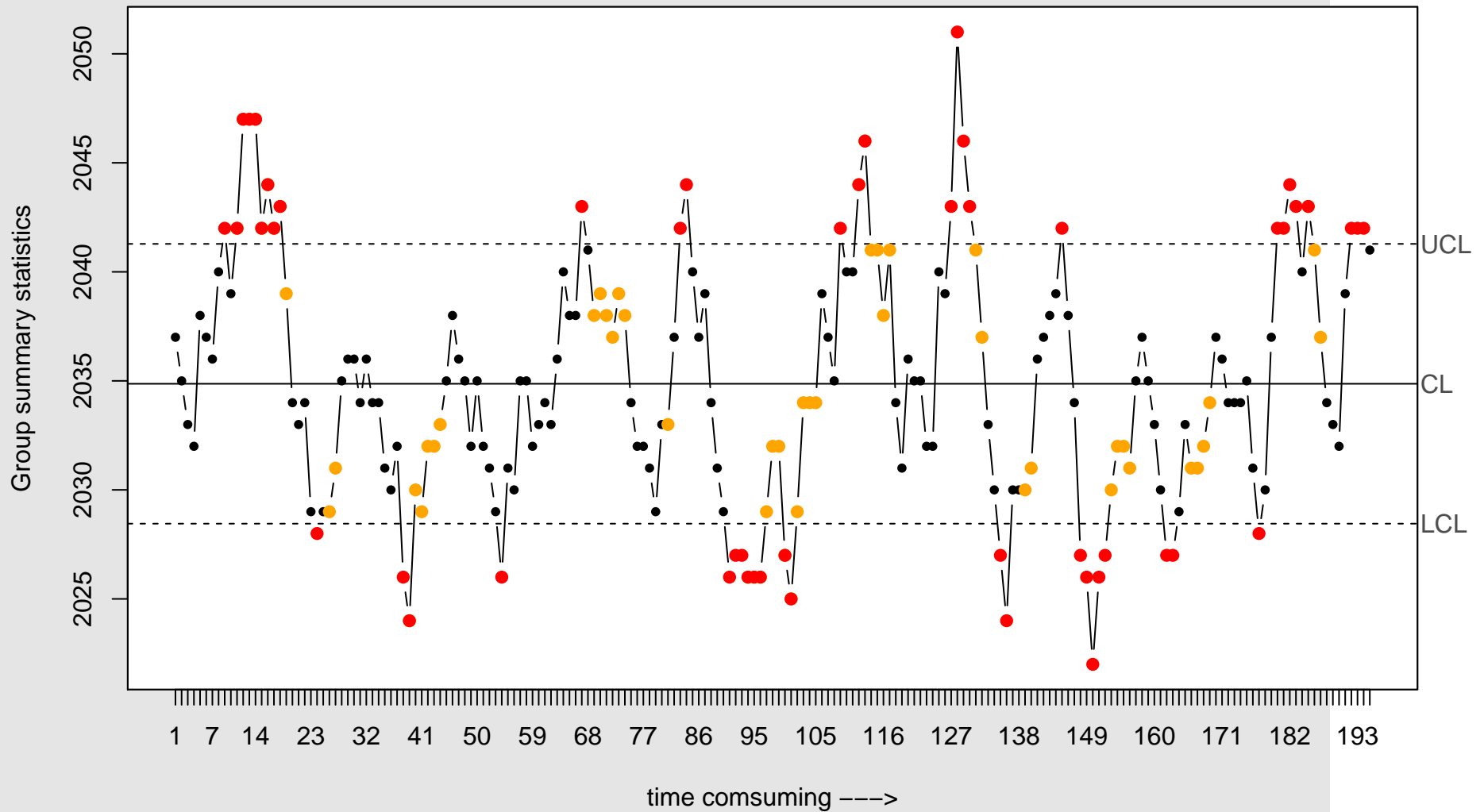


Number of groups = 195  
 Center = 2035.154  
 StdDev = 2.038093

LCL = 2029.04  
 UCL = 2041.268

Number beyond limits = 54  
 Number violating runs = 68

# 117th column point of this product



Number of groups = 195

Center = 2034.867

StdDev = 2.138627

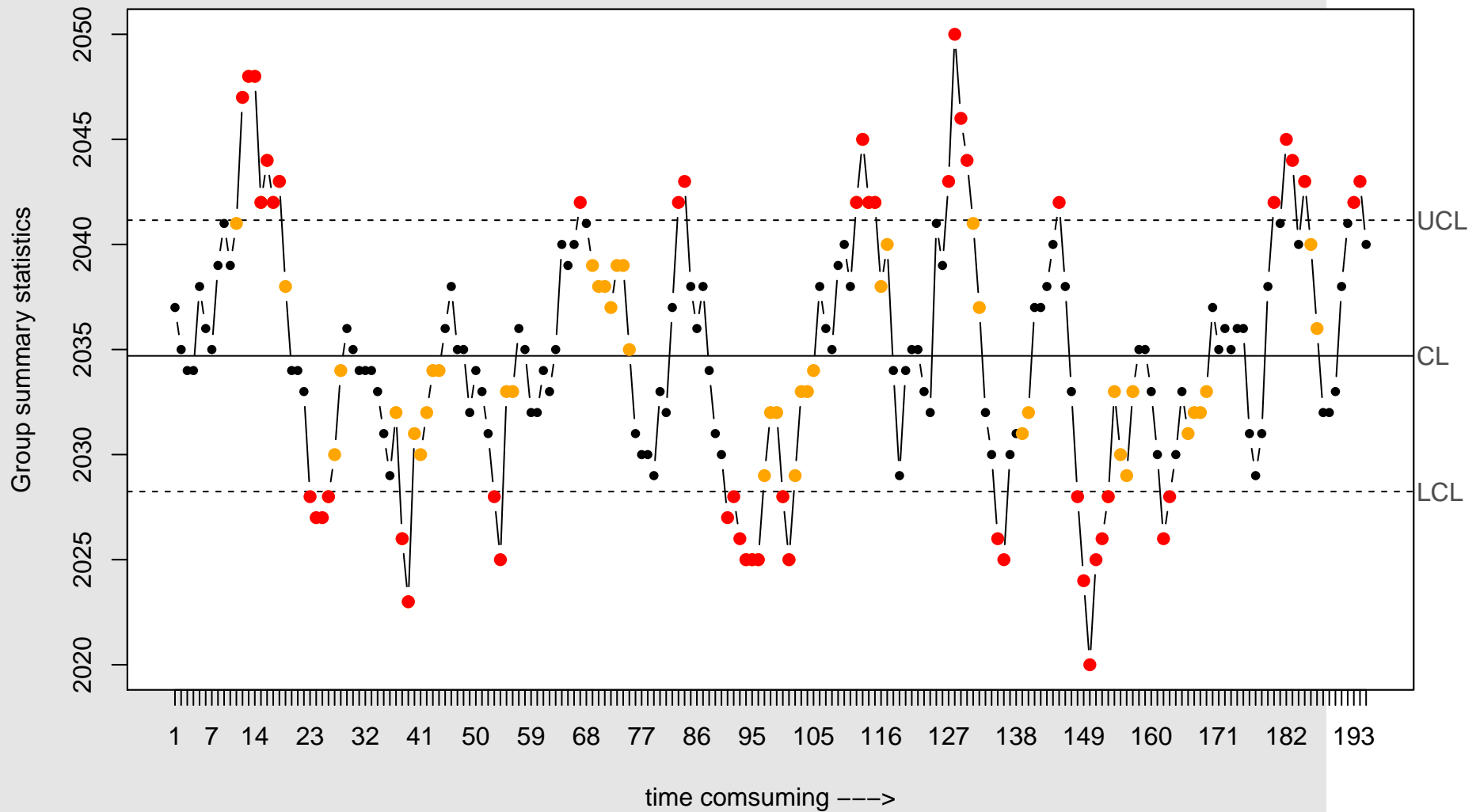
LCL = 2028.451

UCL = 2041.283

Number beyond limits = 50

Number violating runs = 57

# 118th column point of this product

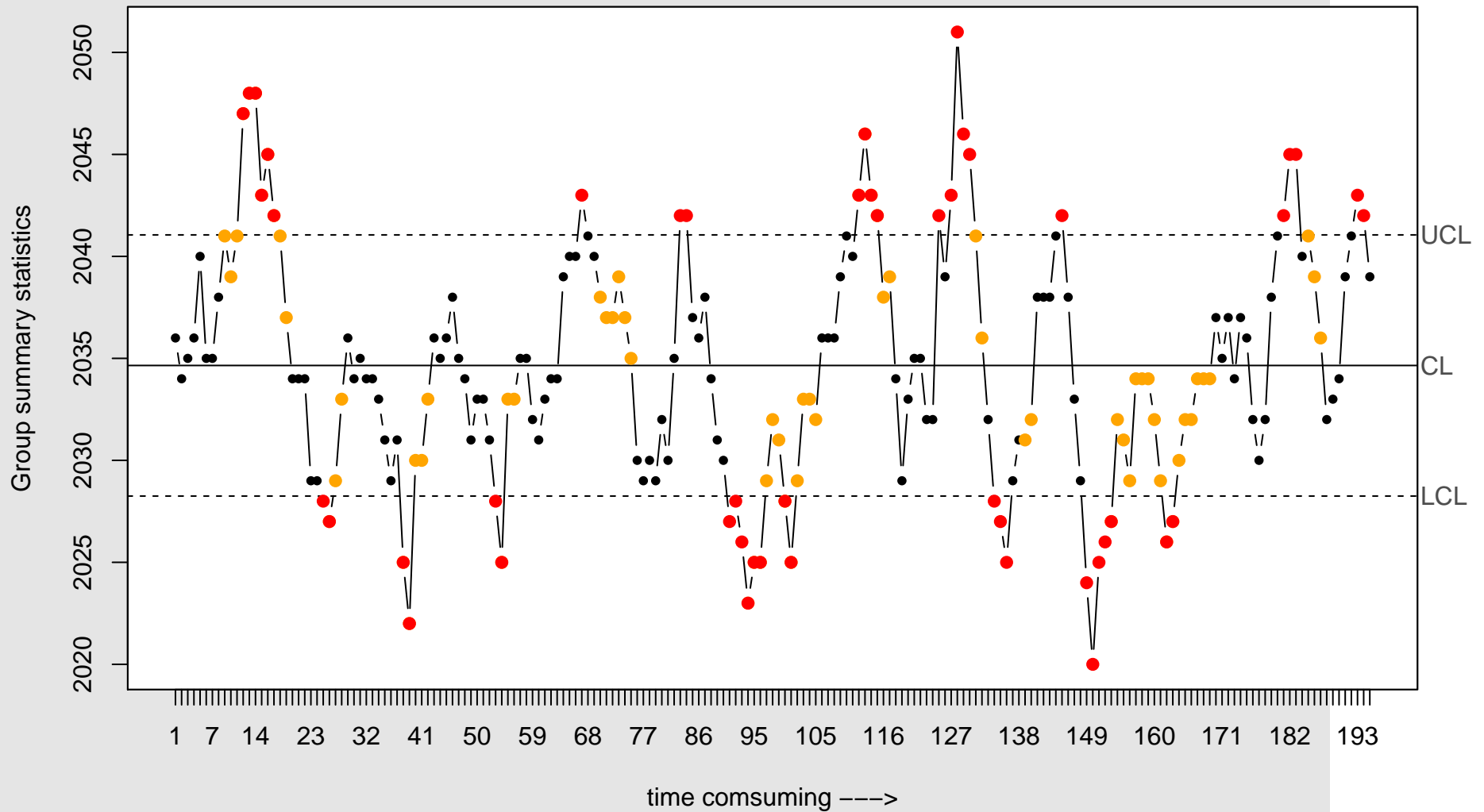


Number of groups = 195  
 Center = 2034.697  
 StdDev = 2.152336

LCL = 2028.24  
 UCL = 2041.154

Number beyond limits = 51  
 Number violating runs = 63

# 119th column point of this product

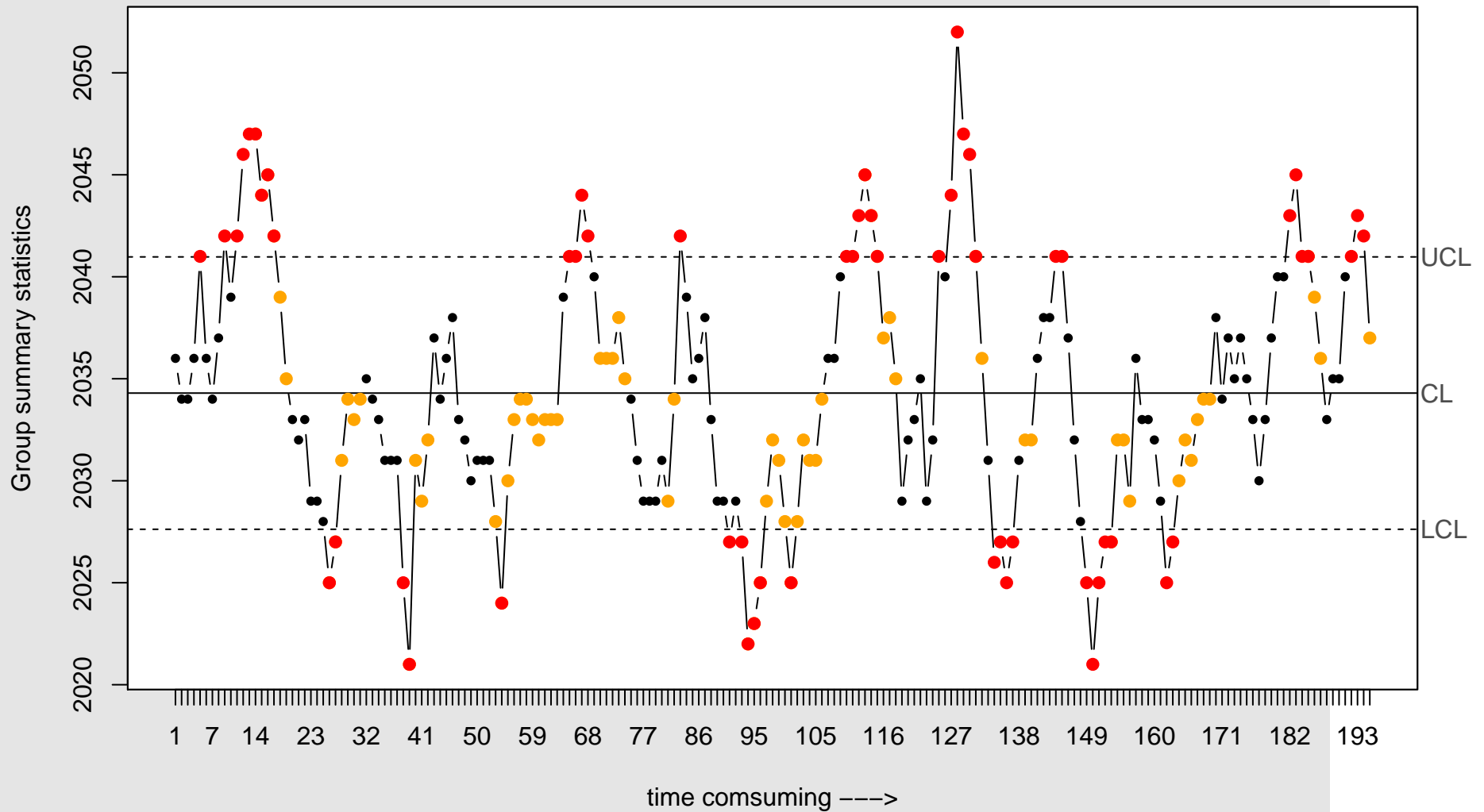


Number of groups = 195  
 Center = 2034.651  
 StdDev = 2.134057

LCL = 2028.249  
 UCL = 2041.053

Number beyond limits = 48  
 Number violating runs = 70

# 120th column point of this product

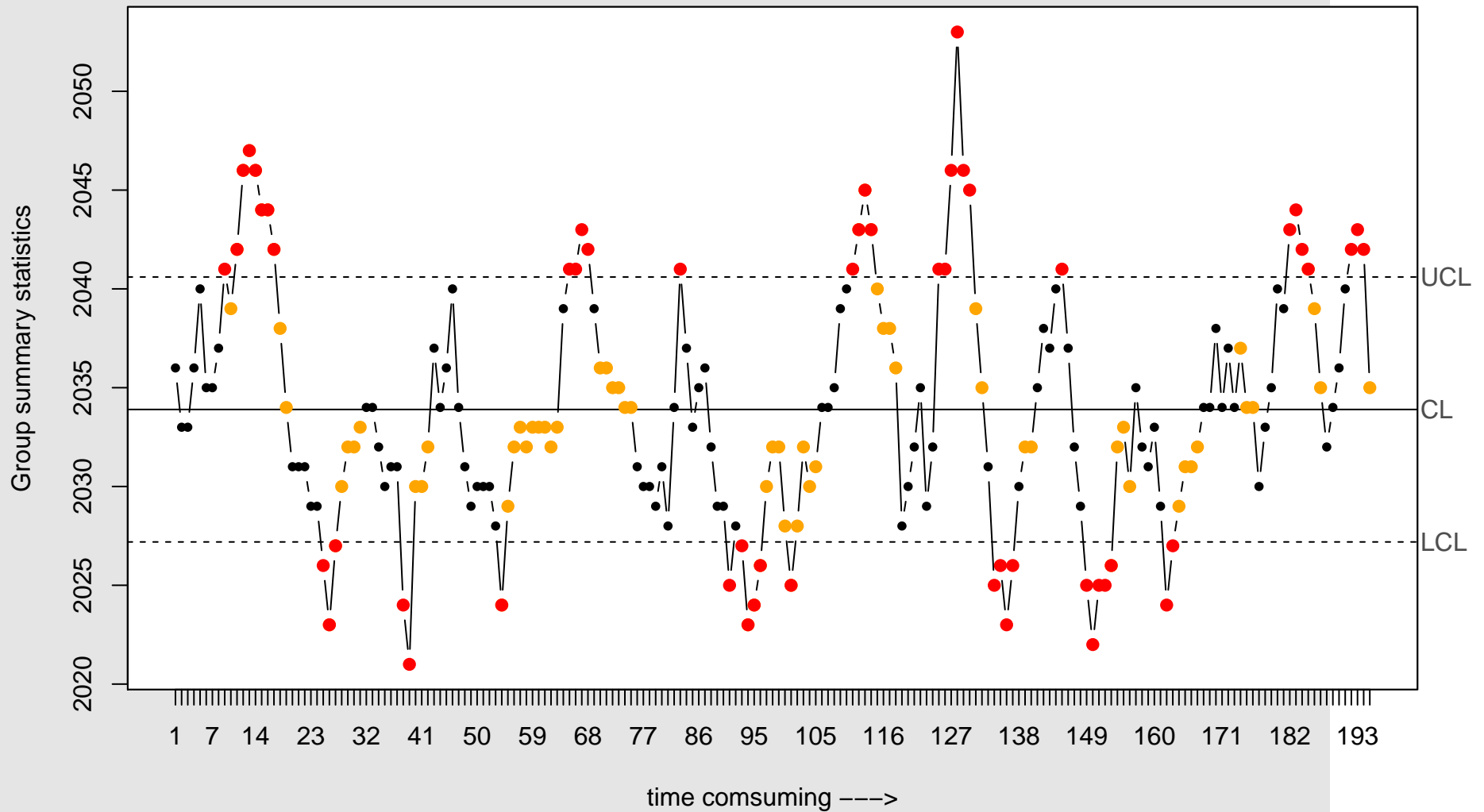


Number of groups = 195  
Center = 2034.297  
StdDev = 2.225451

LCL = 2027.621  
UCL = 2040.974

Number beyond limits = 57  
Number violating runs = 71

# 121th column point of this product



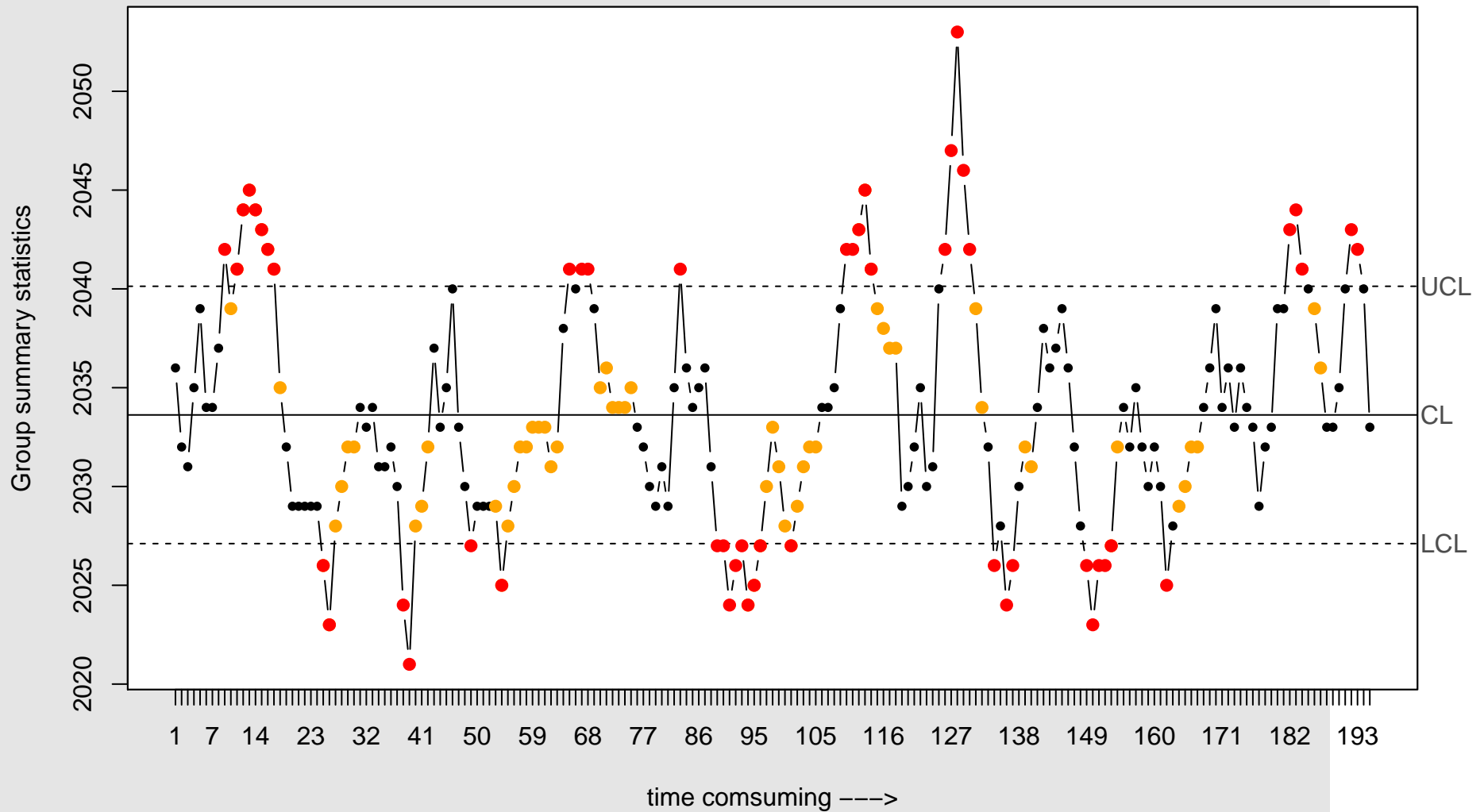
Number of groups = 195  
 Center = 2033.897  
 StdDev = 2.234591

LCL = 2027.194  
 UCL = 2040.601

Number beyond limits = 54  
 Number violating runs = 73



## 122th column point of this product

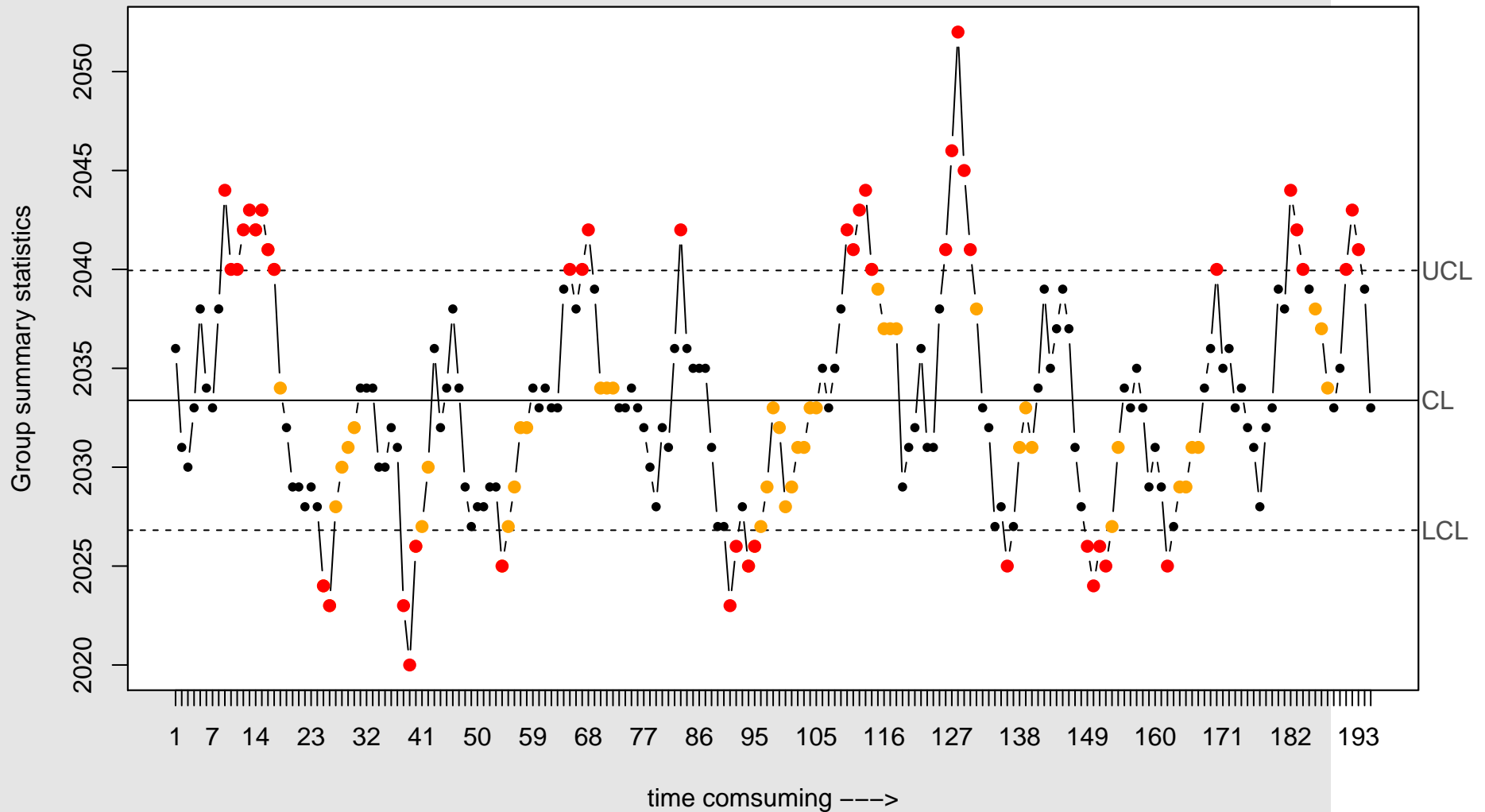


Number of groups = 195  
Center = 2033.621  
StdDev = 2.170615

LCL = 2027.109  
UCL = 2040.132

Number beyond limits = 51  
Number violating runs = 66

# 123th column point of this product



Number of groups = 195

Center = 2033.379

StdDev = 2.188894

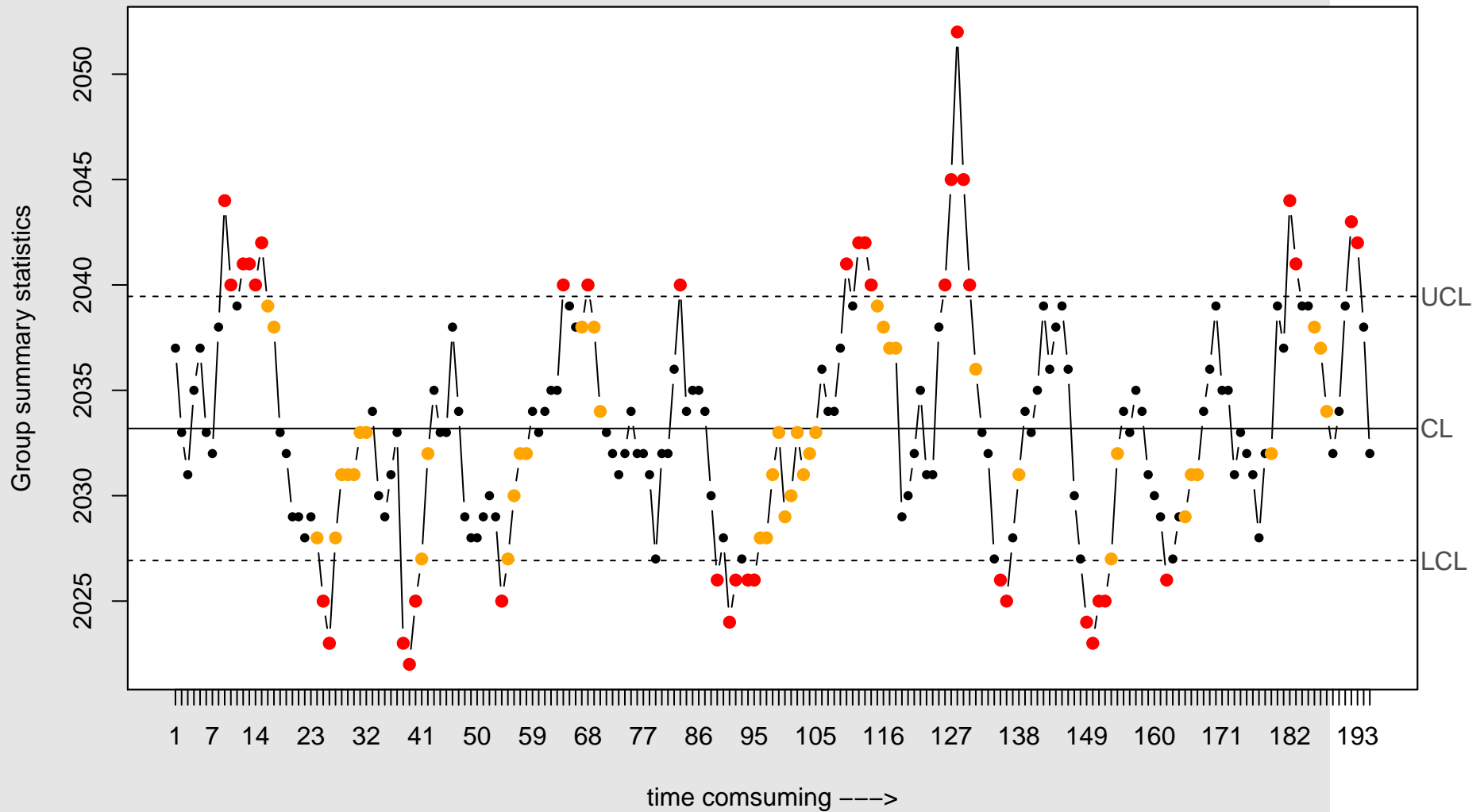
LCL = 2026.813

UCL = 2039.946

Number beyond limits = 46

Number violating runs = 52

# 124th column point of this product

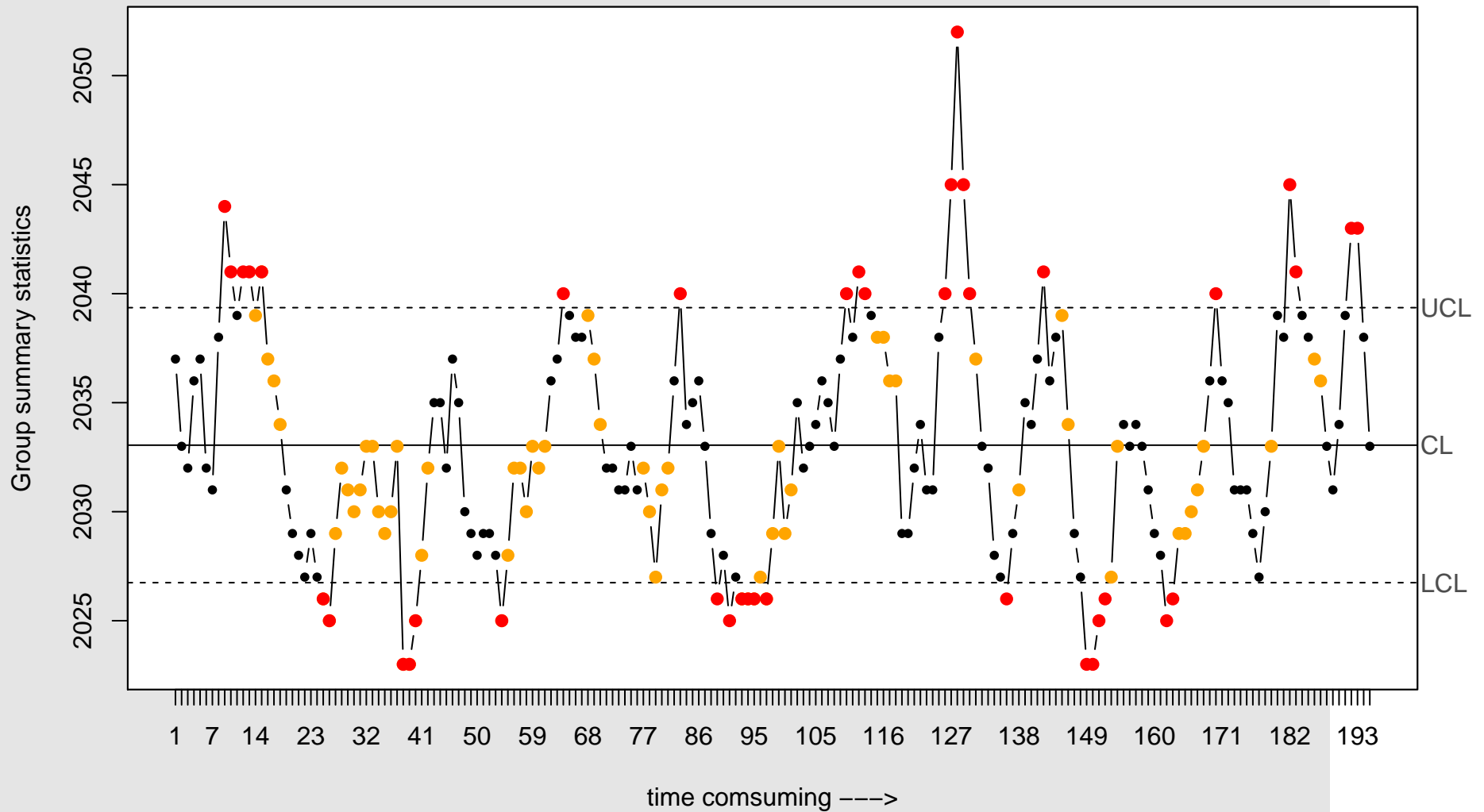


Number of groups = 195  
 Center = 2033.19  
 StdDev = 2.08836

LCL = 2026.925  
 UCL = 2039.455

Number beyond limits = 40  
 Number violating runs = 55

# 125th column point of this product



Number of groups = 195

Center = 2033.051

StdDev = 2.102069

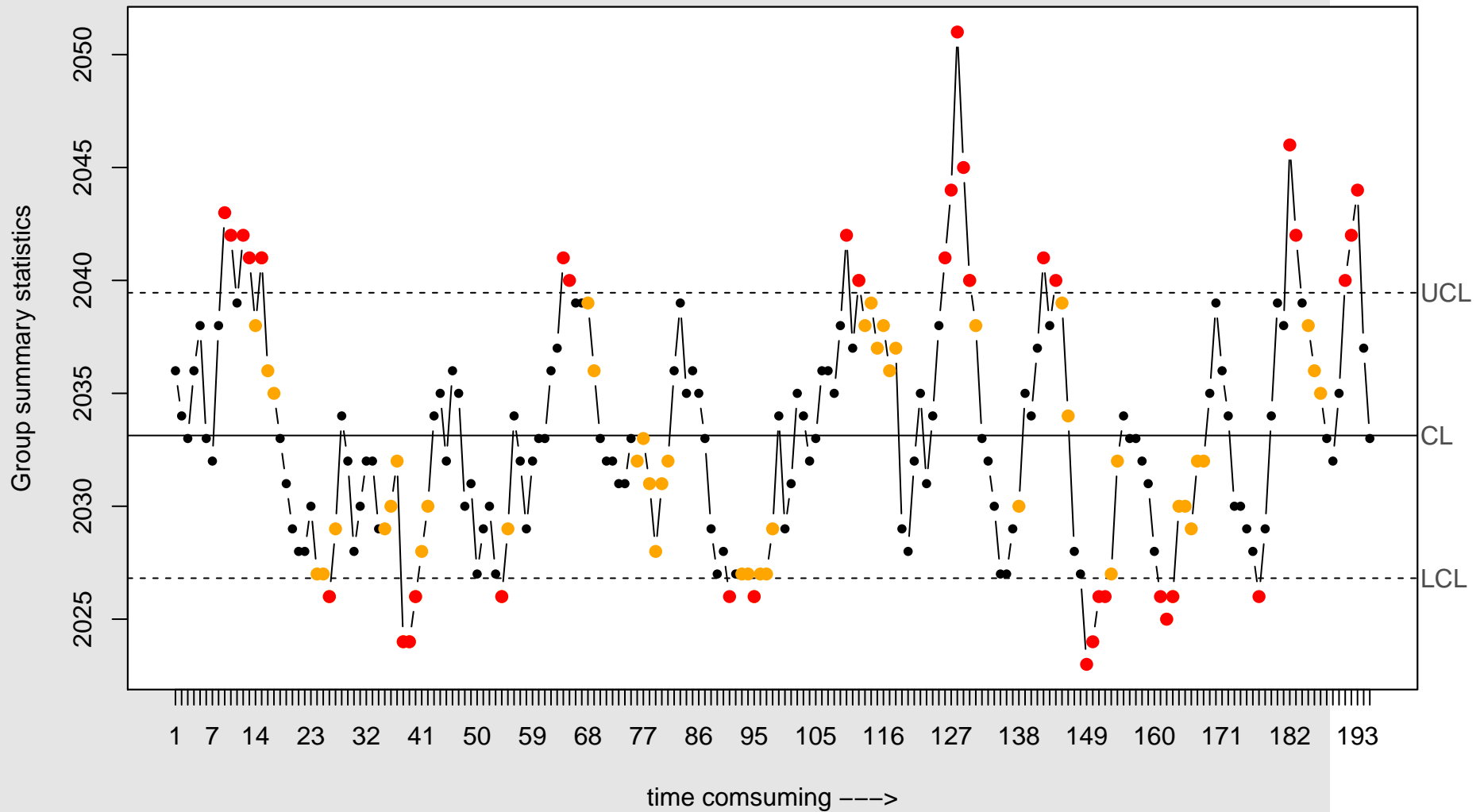
LCL = 2026.745

UCL = 2039.357

Number beyond limits = 40

Number violating runs = 66

## 126th column point of this product



Number of groups = 195

Center = 2033.133

StdDev = 2.106639

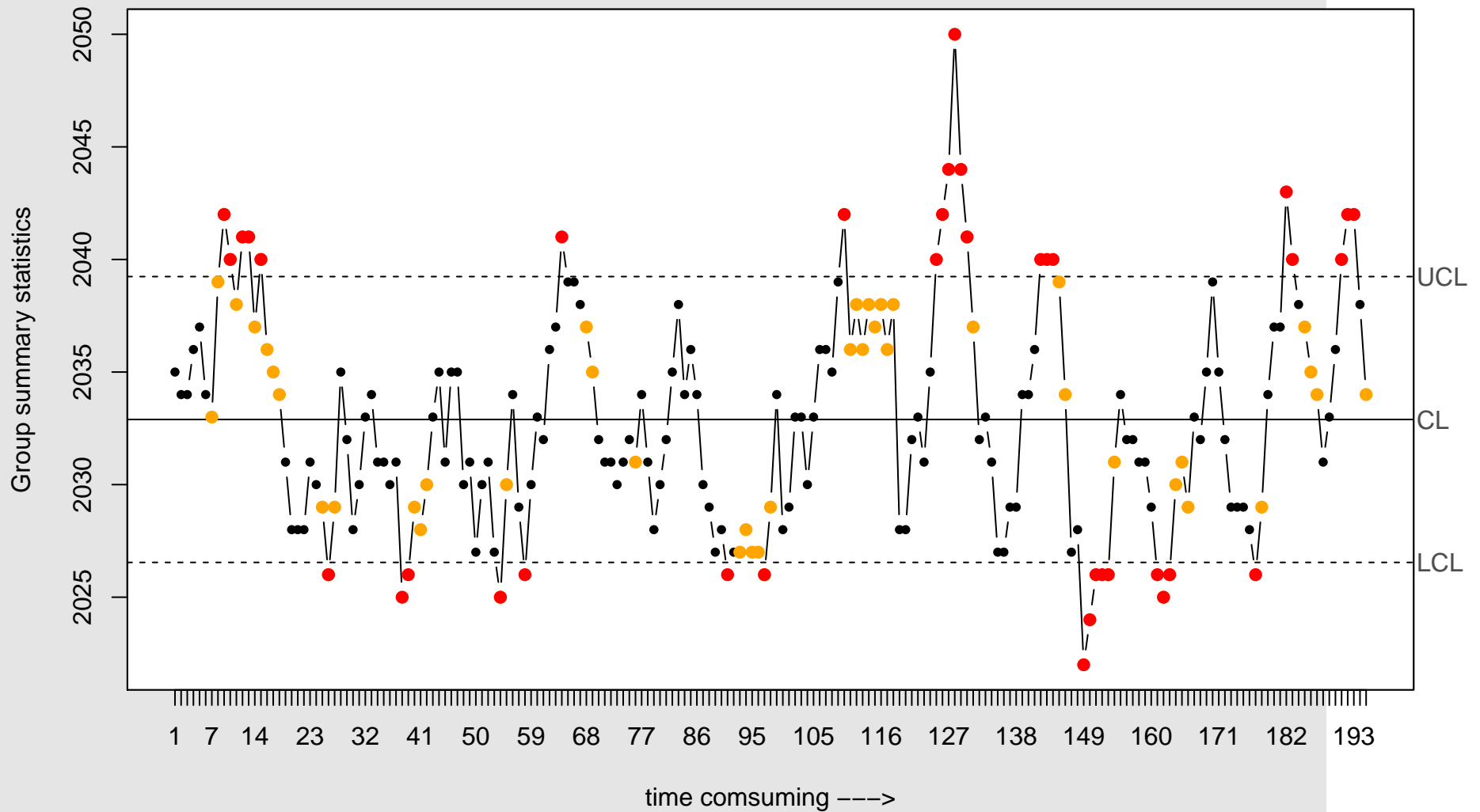
LCL = 2026.813

UCL = 2039.453

Number beyond limits = 36

Number violating runs = 56

# 127th column point of this product



Number of groups = 195

Center = 2032.892

StdDev = 2.115778

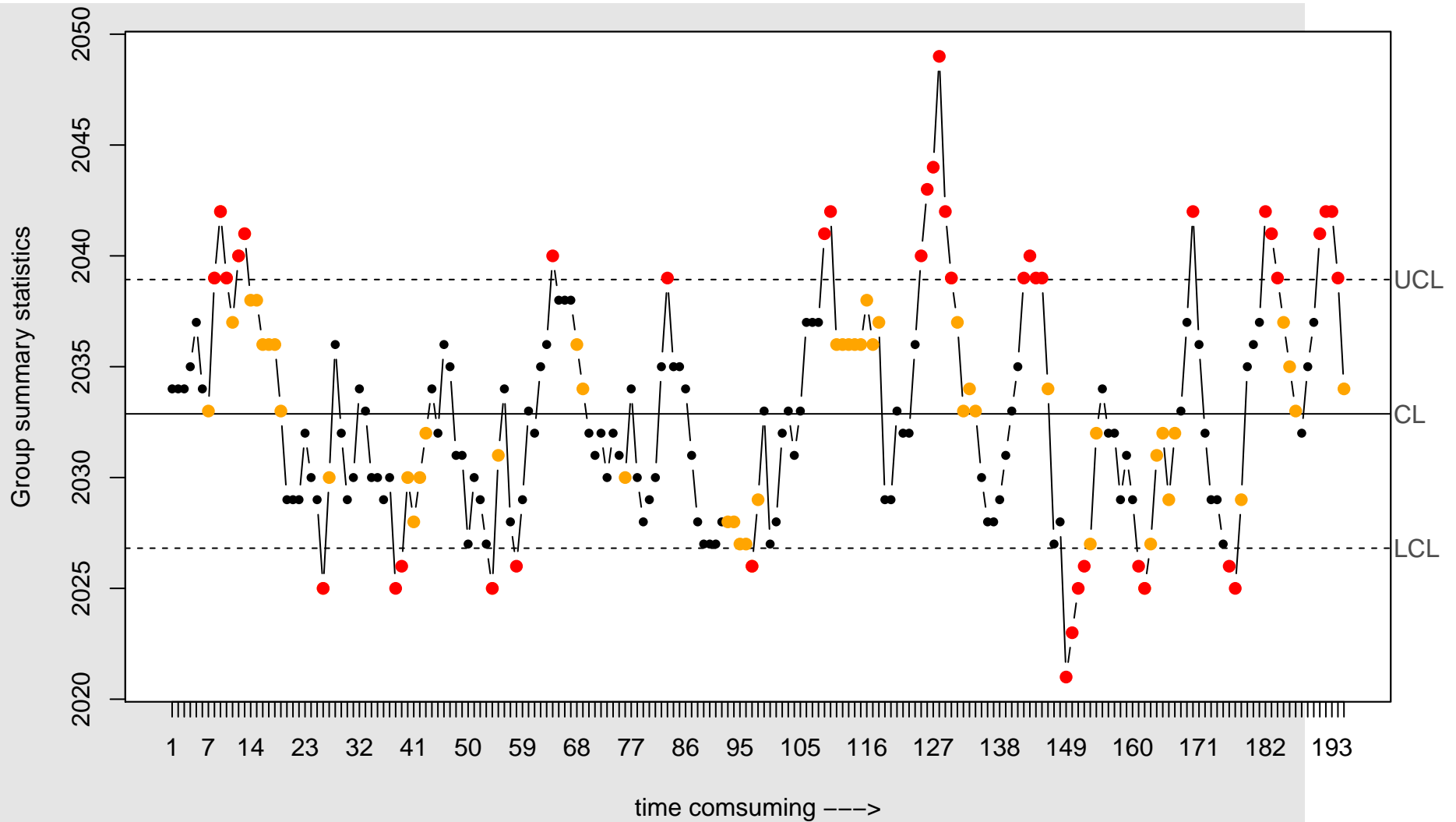
LCL = 2026.545

UCL = 2039.24

Number beyond limits = 37

Number violating runs = 53

# 128th column point of this product

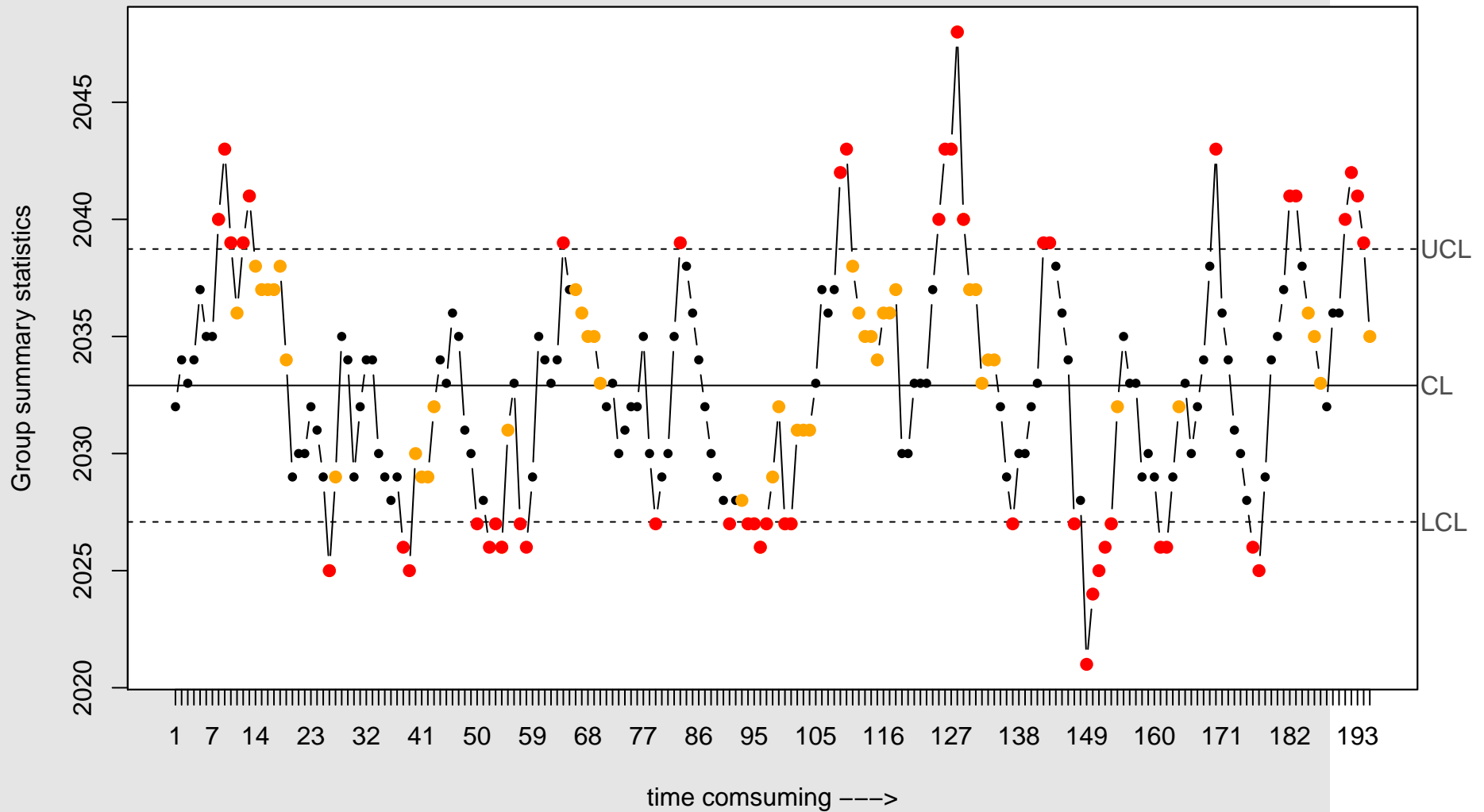


Number of groups = 195  
Center = 2032.872  
StdDev = 2.019814

LCL = 2026.812  
UCL = 2038.931

Number beyond limits = 41  
Number violating runs = 57

# 129th column point of this product



Number of groups = 195

Center = 2032.908

StdDev = 1.942129

LCL = 2027.081

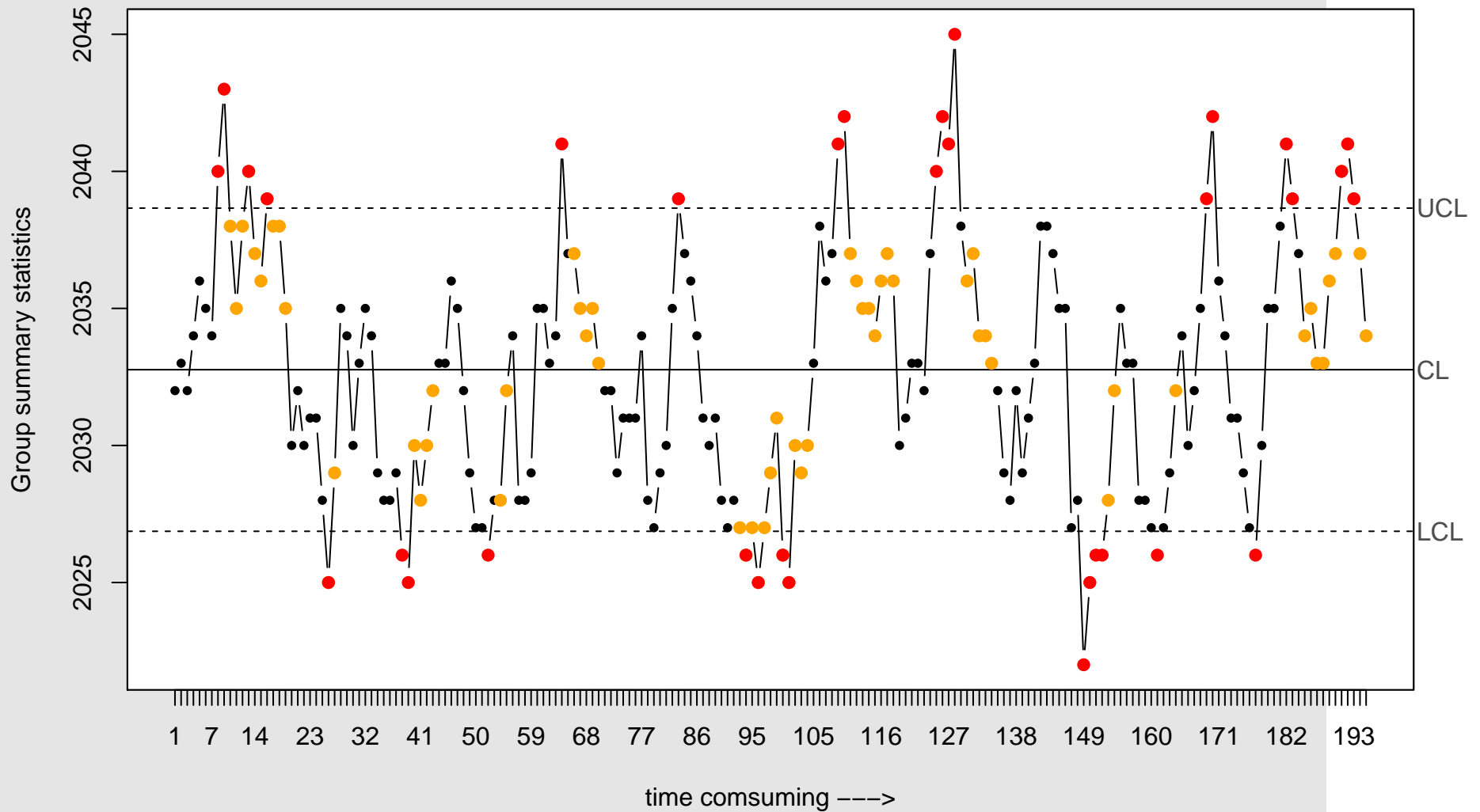
UCL = 2038.734

Number beyond limits = 51

Number violating runs = 60



# 130th column point of this product



Number of groups = 195

Center = 2032.764

StdDev = 1.964978

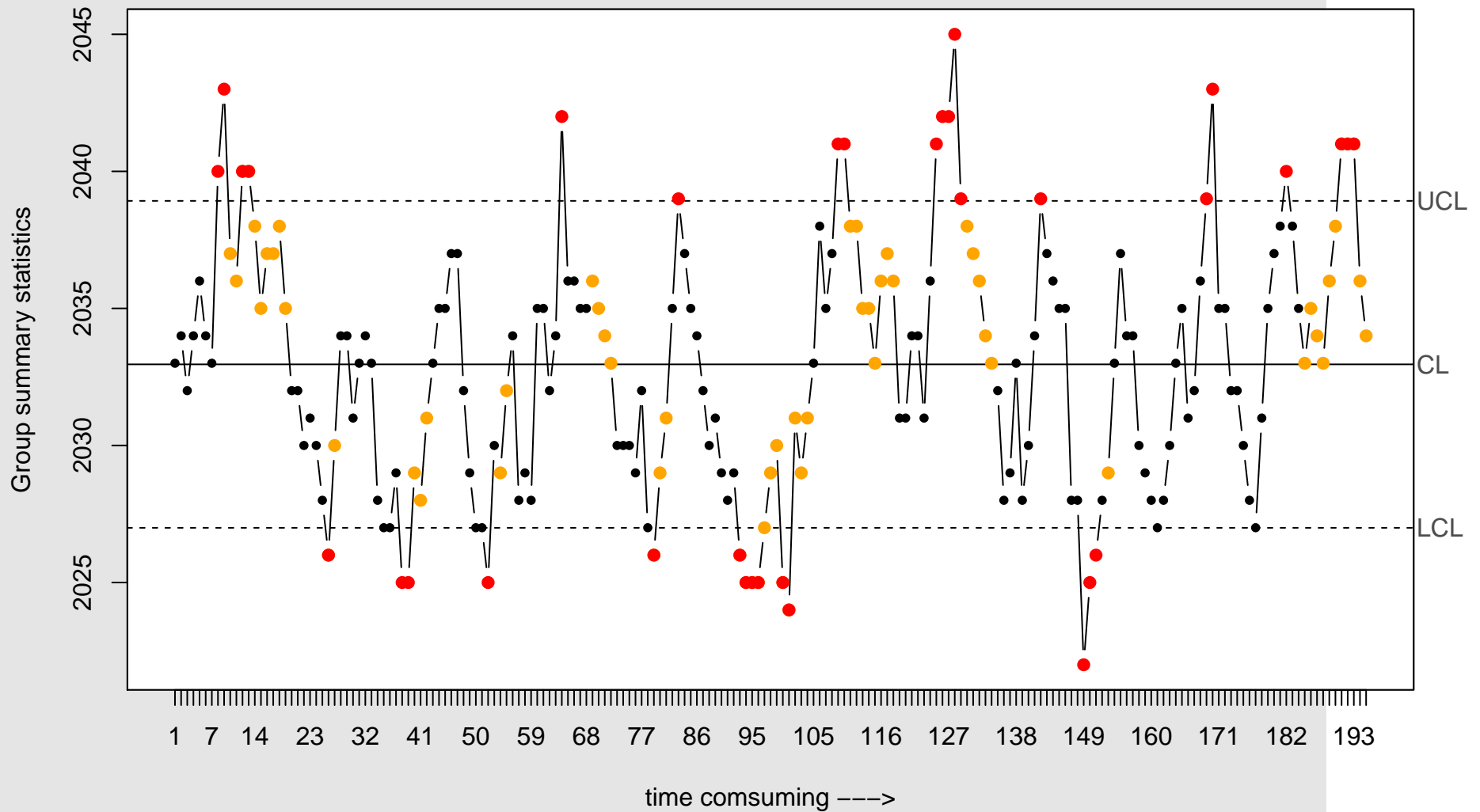
LCL = 2026.869

UCL = 2038.659

Number beyond limits = 33

Number violating runs = 62

# 131th column point of this product

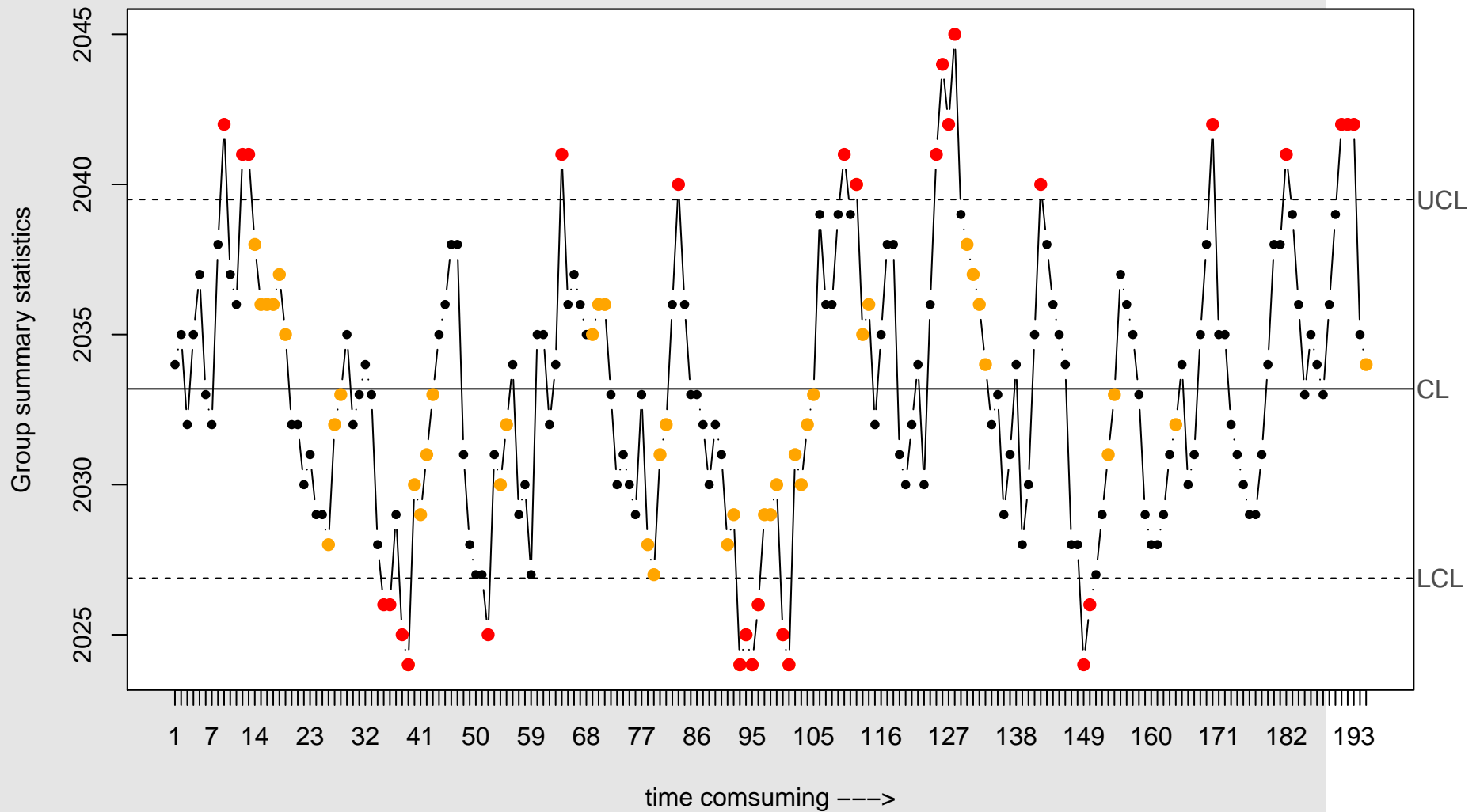


Number of groups = 195  
Center = 2032.959  
StdDev = 1.987826

LCL = 2026.995  
UCL = 2038.922

Number beyond limits = 34  
Number violating runs = 61

# 132th column point of this product

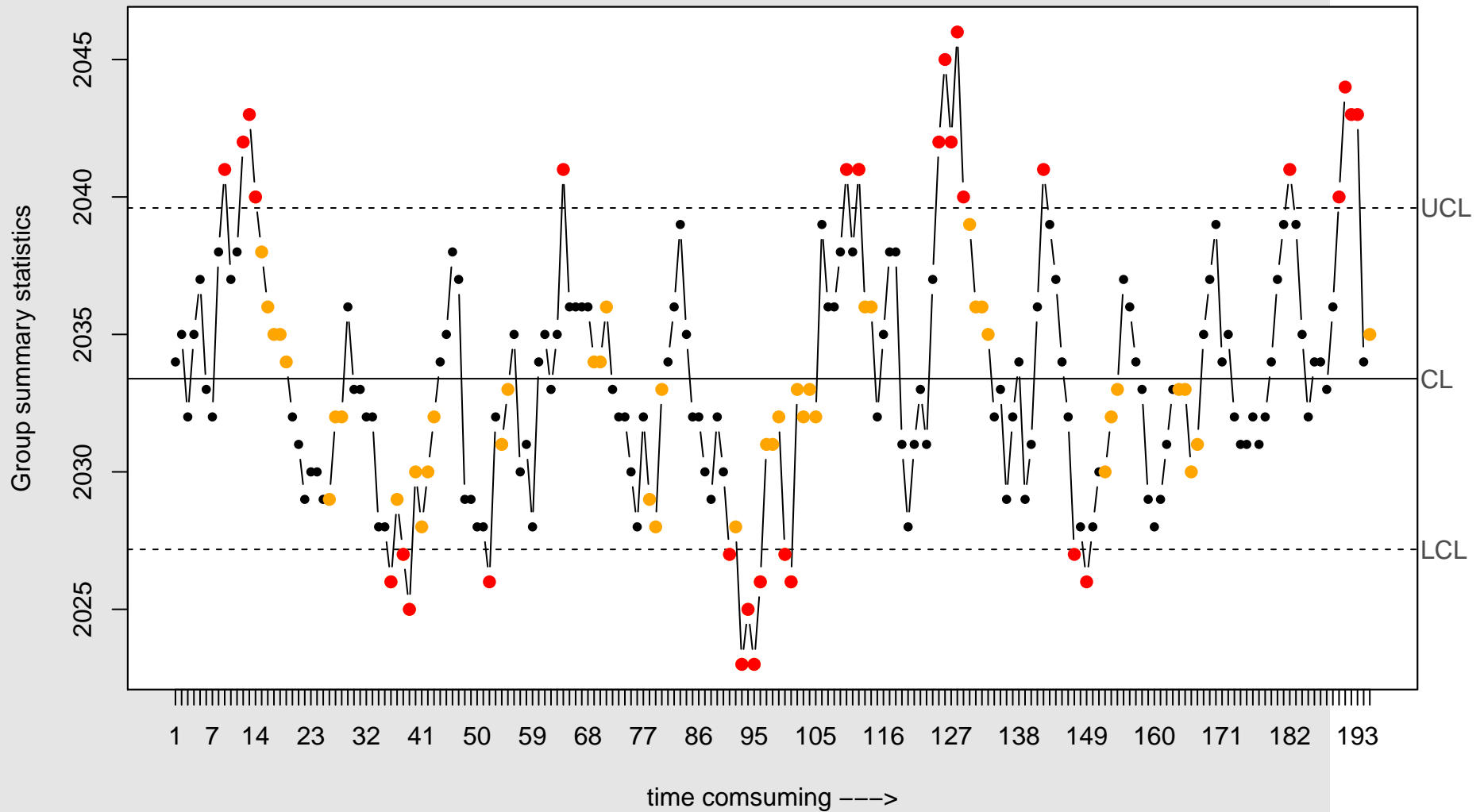


Number of groups = 195  
 Center = 2033.19  
 StdDev = 2.102069

LCL = 2026.884  
 UCL = 2039.496

Number beyond limits = 30  
 Number violating runs = 49

# 133th column point of this product



Number of groups = 195

Center = 2033.39

StdDev = 2.070081

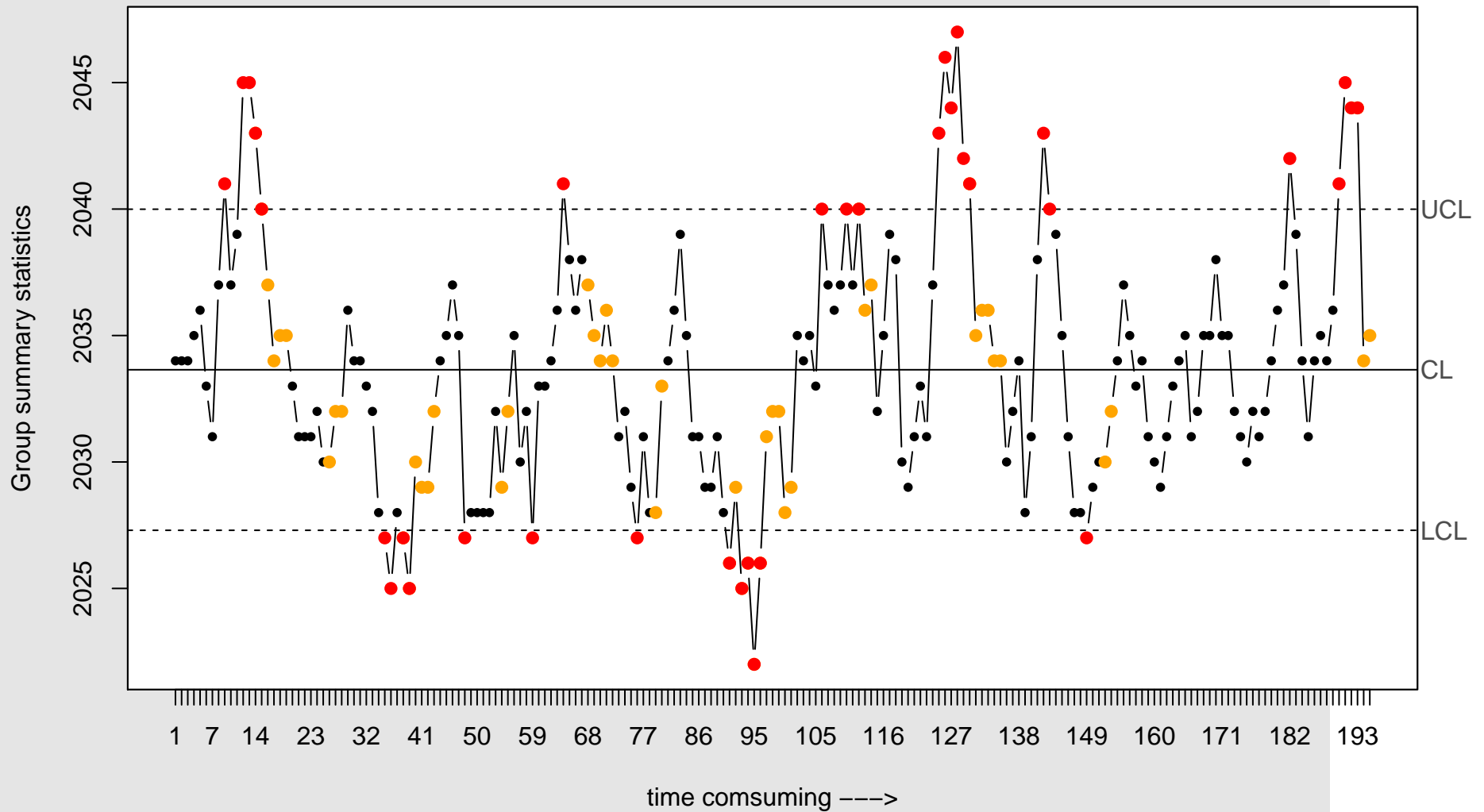
LCL = 2027.18

UCL = 2039.6

Number beyond limits = 31

Number violating runs = 55

# 134th column point of this product



Number of groups = 195

Center = 2033.646

StdDev = 2.115778

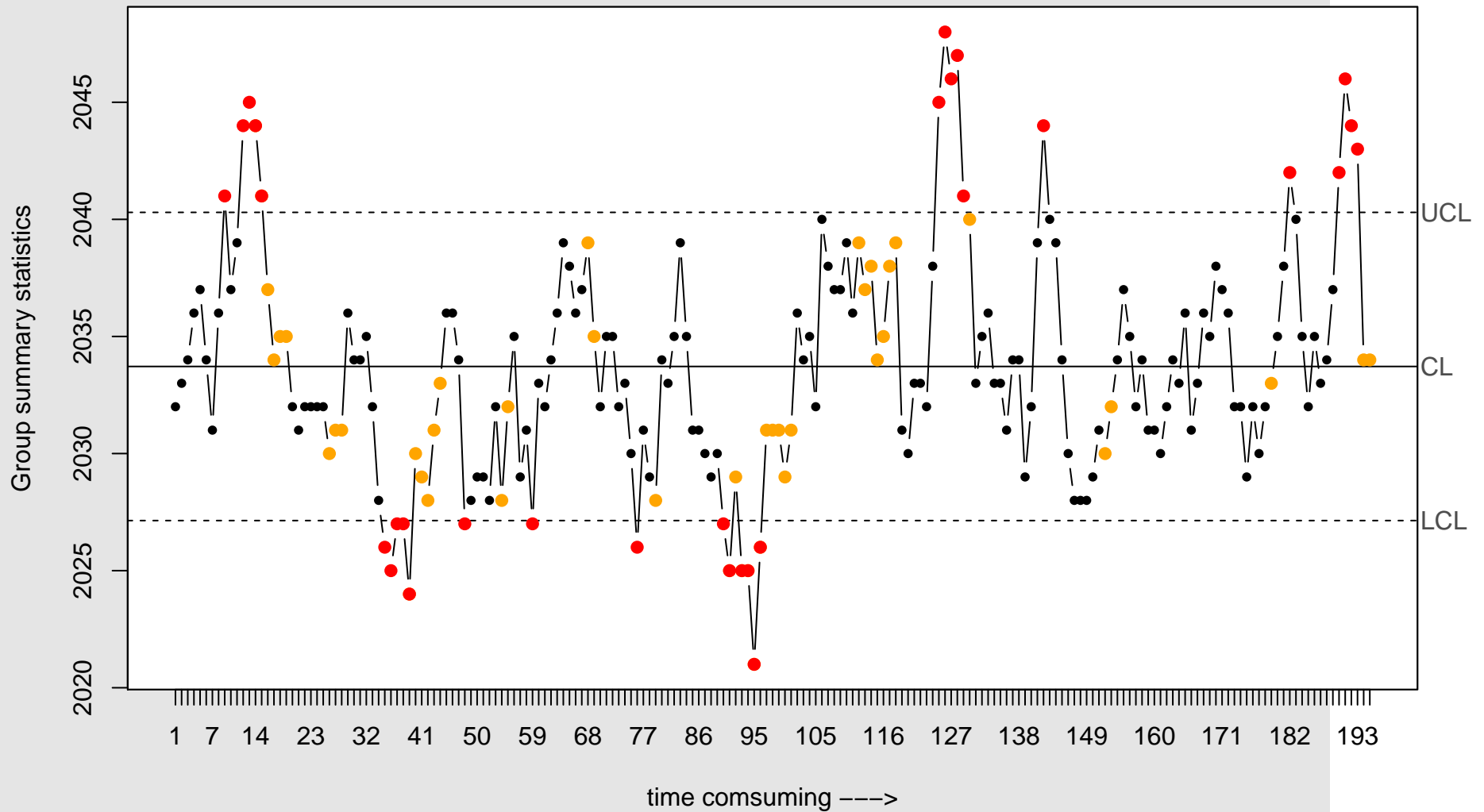
LCL = 2027.299

UCL = 2039.993

Number beyond limits = 35

Number violating runs = 50

# 135th column point of this product



Number of groups = 195

Center = 2033.718

StdDev = 2.193463

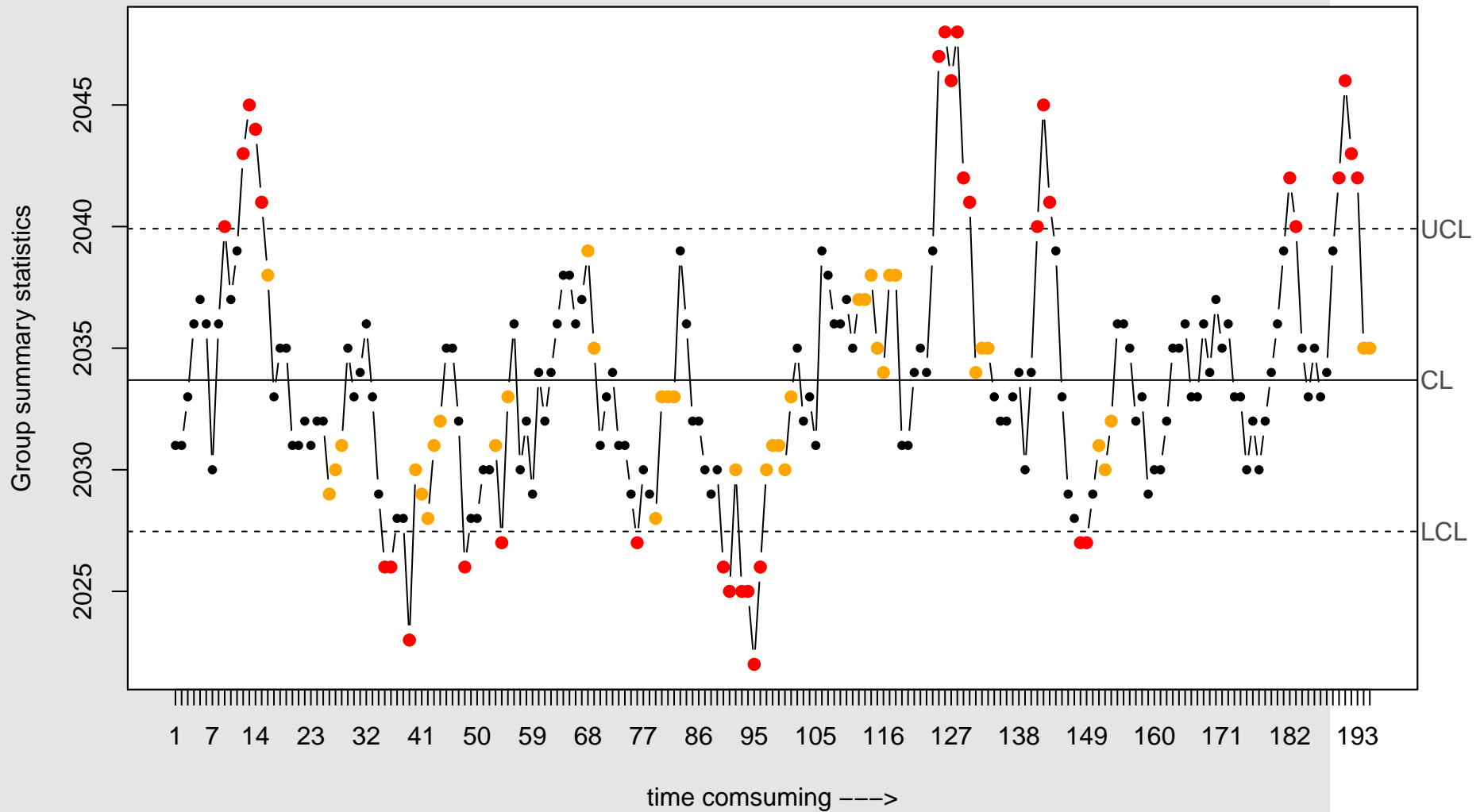
LCL = 2027.138

UCL = 2040.298

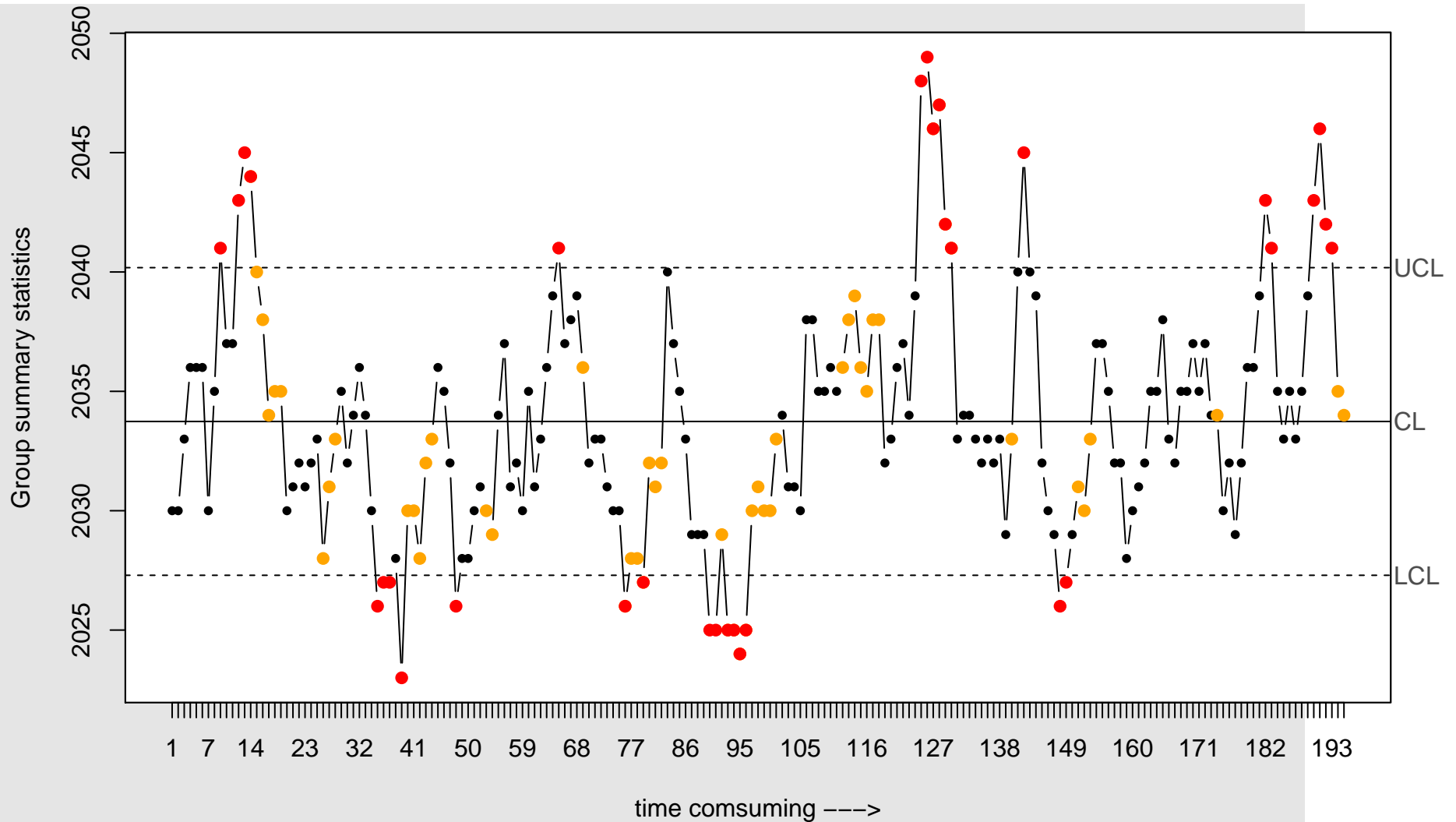
Number beyond limits = 30

Number violating runs = 44

# 136th column point of this product



# 137th column point of this product



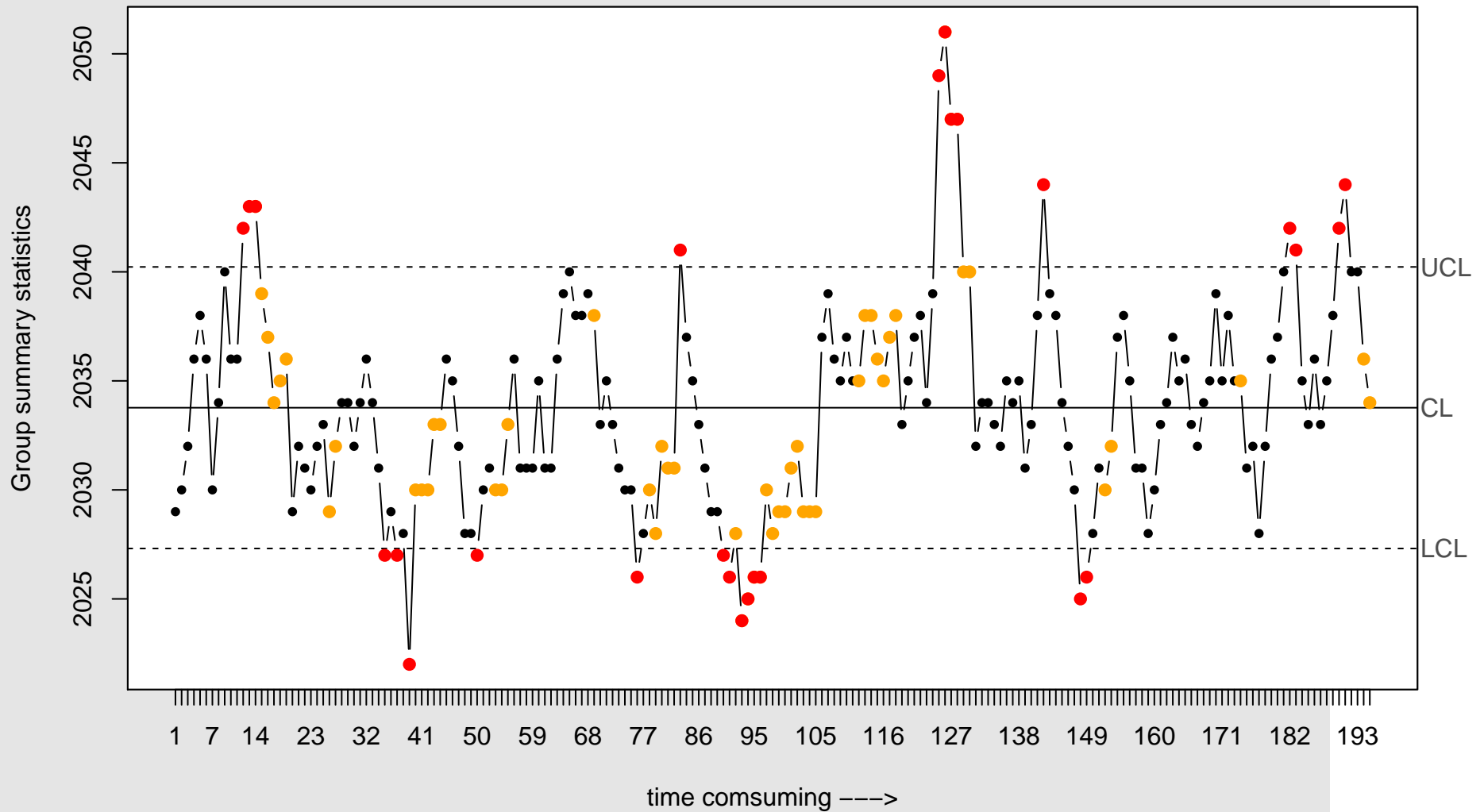
Number of groups = 195  
 Center = 2033.738  
 StdDev = 2.147766

LCL = 2027.295  
 UCL = 2040.182

Number beyond limits = 33  
 Number violating runs = 52



# 138th column point of this product

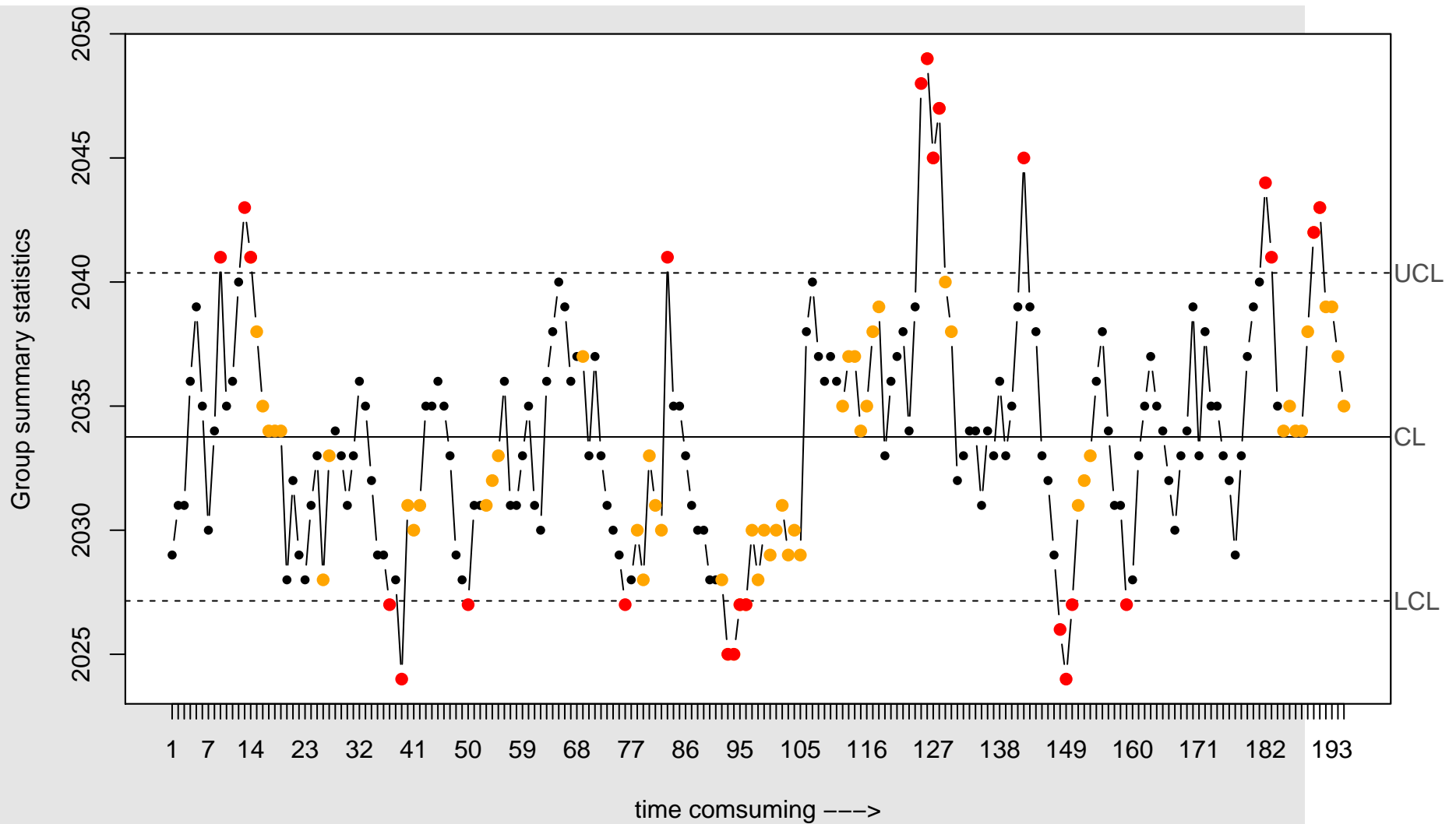


Number of groups = 195  
 Center = 2033.769  
 StdDev = 2.152336

LCL = 2027.312  
 UCL = 2040.226

Number beyond limits = 26  
 Number violating runs = 53

# 139th column point of this product

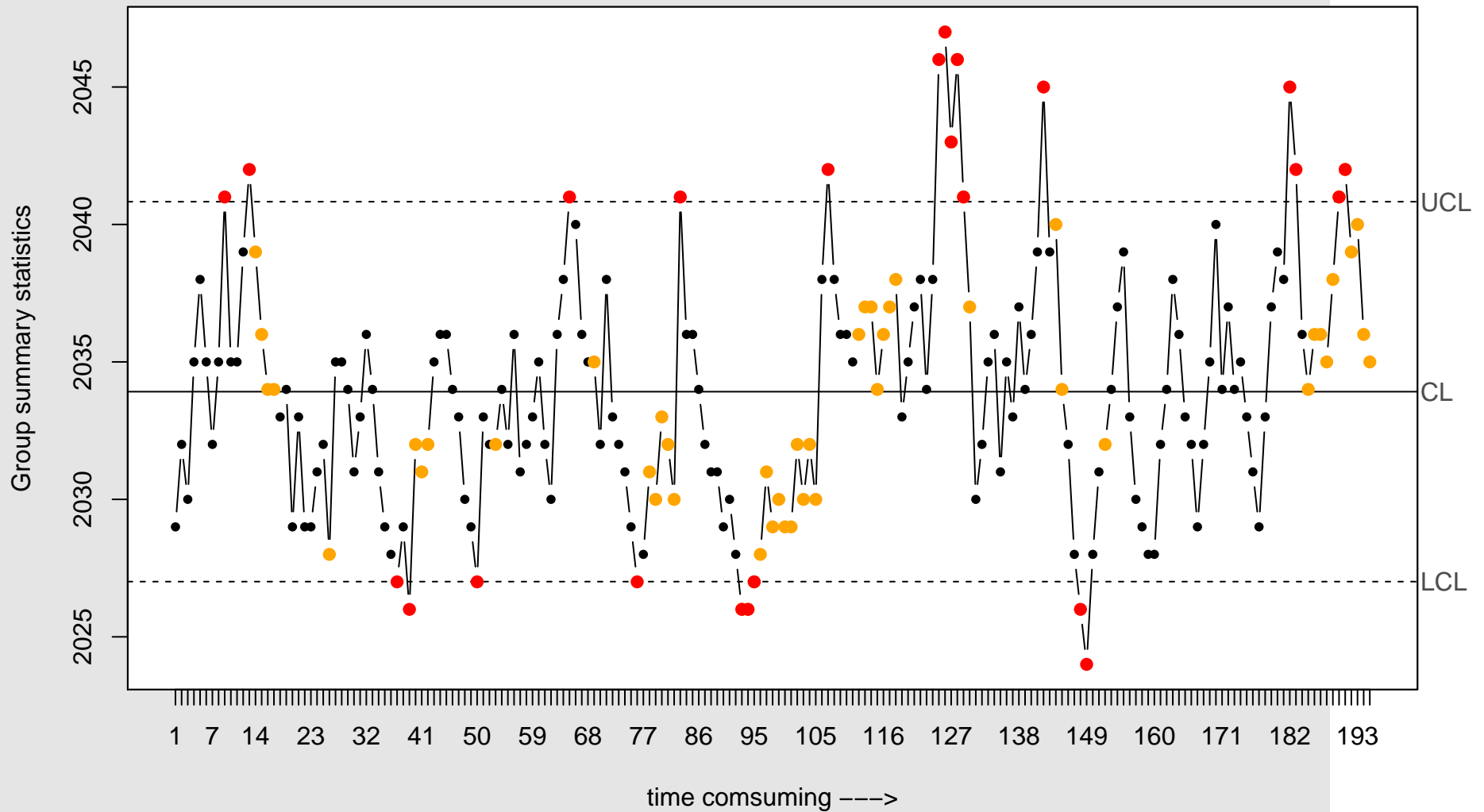


Number of groups = 195  
Center = 2033.759  
StdDev = 2.202603

LCL = 2027.151  
UCL = 2040.367

Number beyond limits = 25  
Number violating runs = 60

# 140th column point of this product

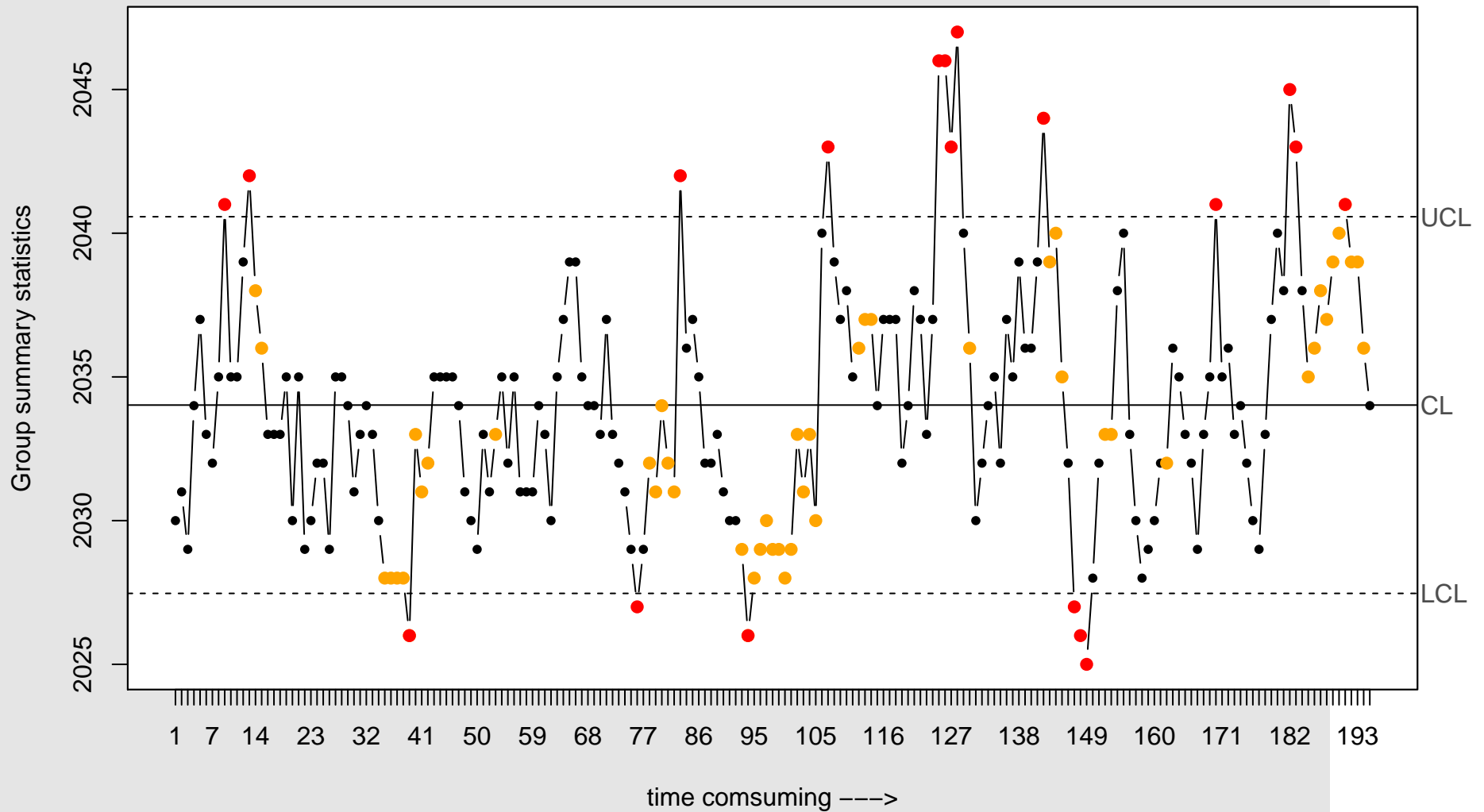


Number of groups = 195  
 Center = 2033.918  
 StdDev = 2.303137

LCL = 2027.009  
 UCL = 2040.827

Number beyond limits = 24  
 Number violating runs = 54

# 141th column point of this product



Number of groups = 195

Center = 2034.021

StdDev = 2.184324

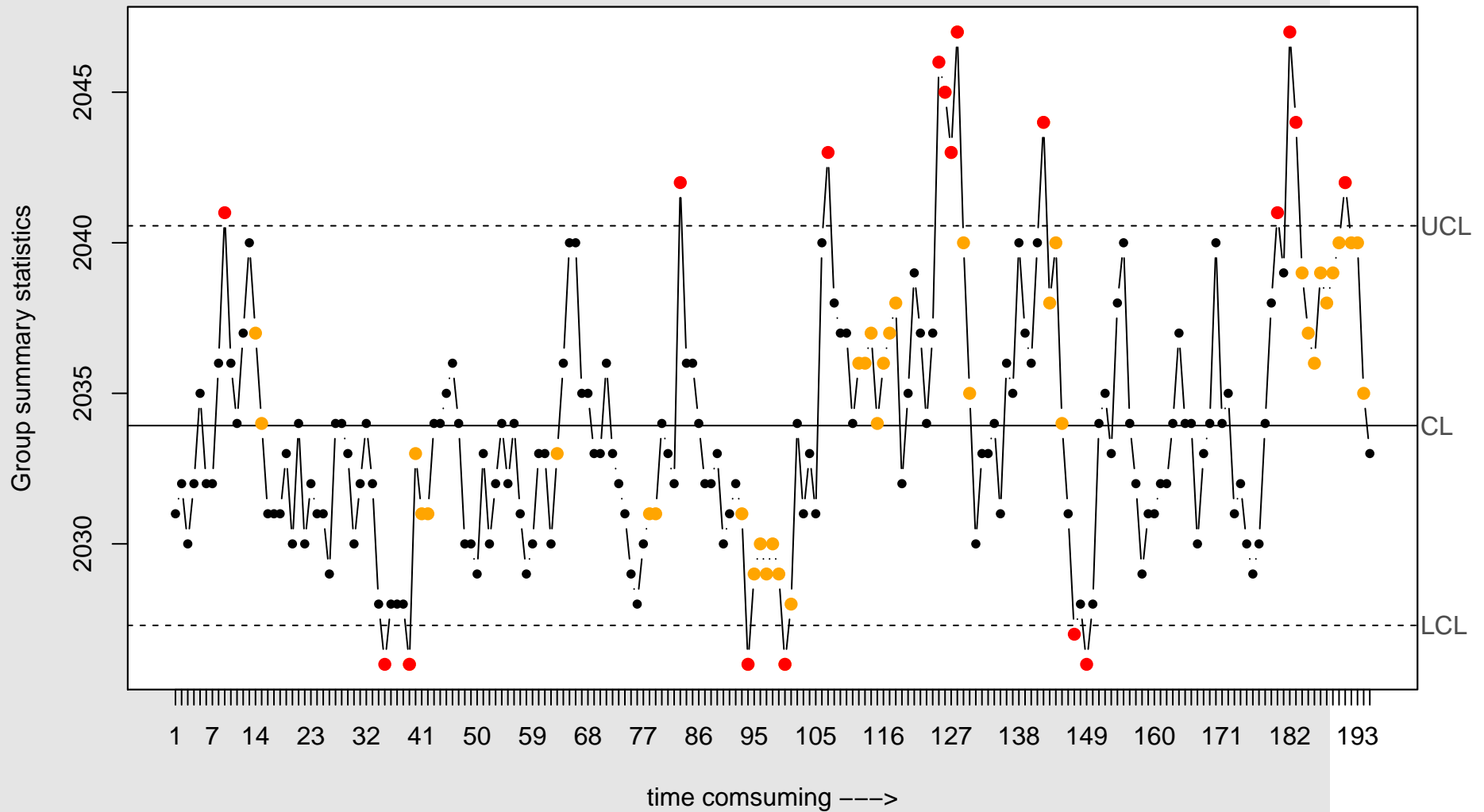
LCL = 2027.468

UCL = 2040.573

Number beyond limits = 19

Number violating runs = 50

# 142th column point of this product

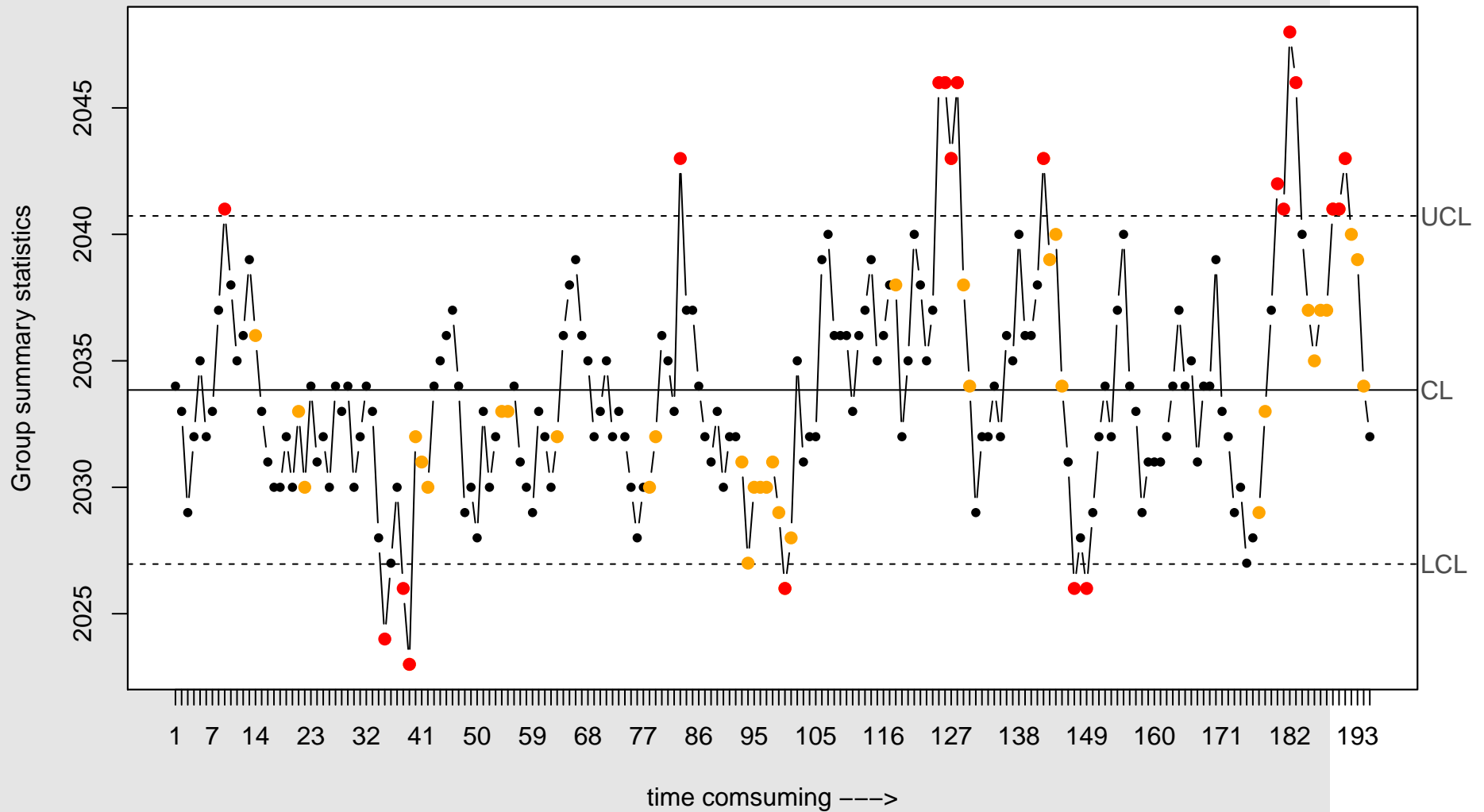


Number of groups = 195  
Center = 2033.928  
StdDev = 2.211742

LCL = 2027.293  
UCL = 2040.563

Number beyond limits = 18  
Number violating runs = 45

# 143th column point of this product



Number of groups = 195

Center = 2033.846

StdDev = 2.293997

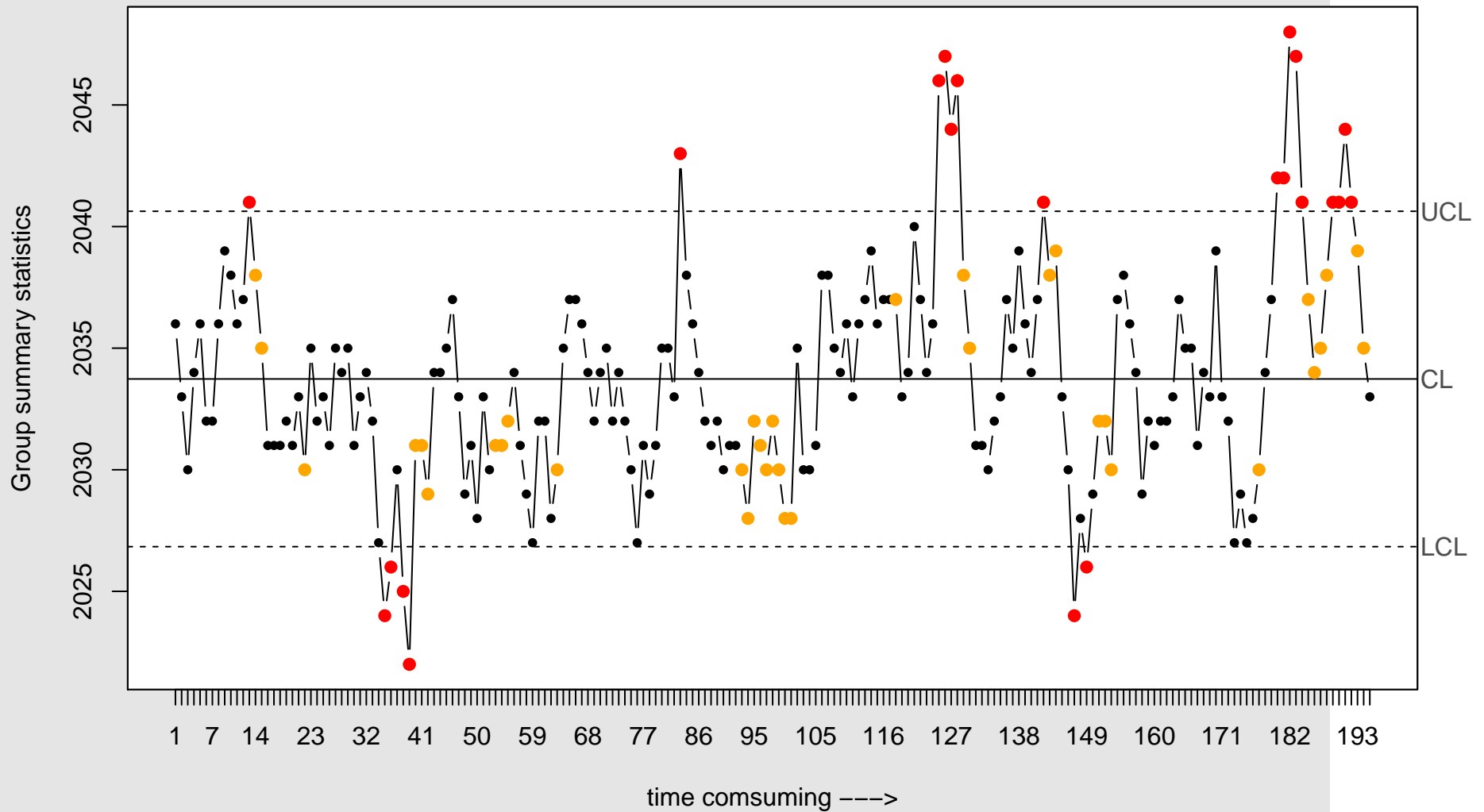
LCL = 2026.964

UCL = 2040.728

Number beyond limits = 20

Number violating runs = 43

# 144th column point of this product

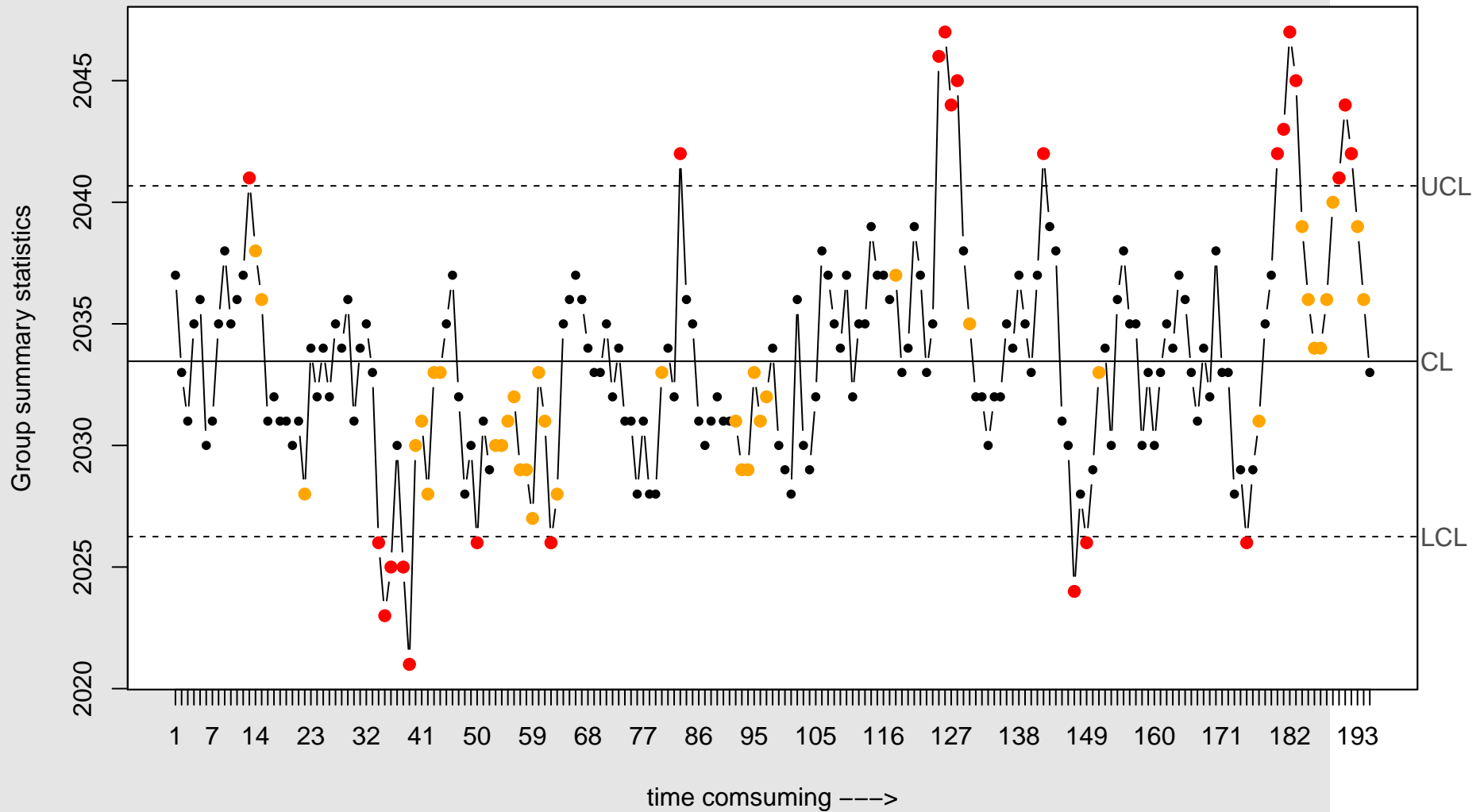


Number of groups = 195  
 Center = 2033.733  
 StdDev = 2.298567

LCL = 2026.838  
 UCL = 2040.629

Number beyond limits = 22  
 Number violating runs = 44

# 145th column point of this product



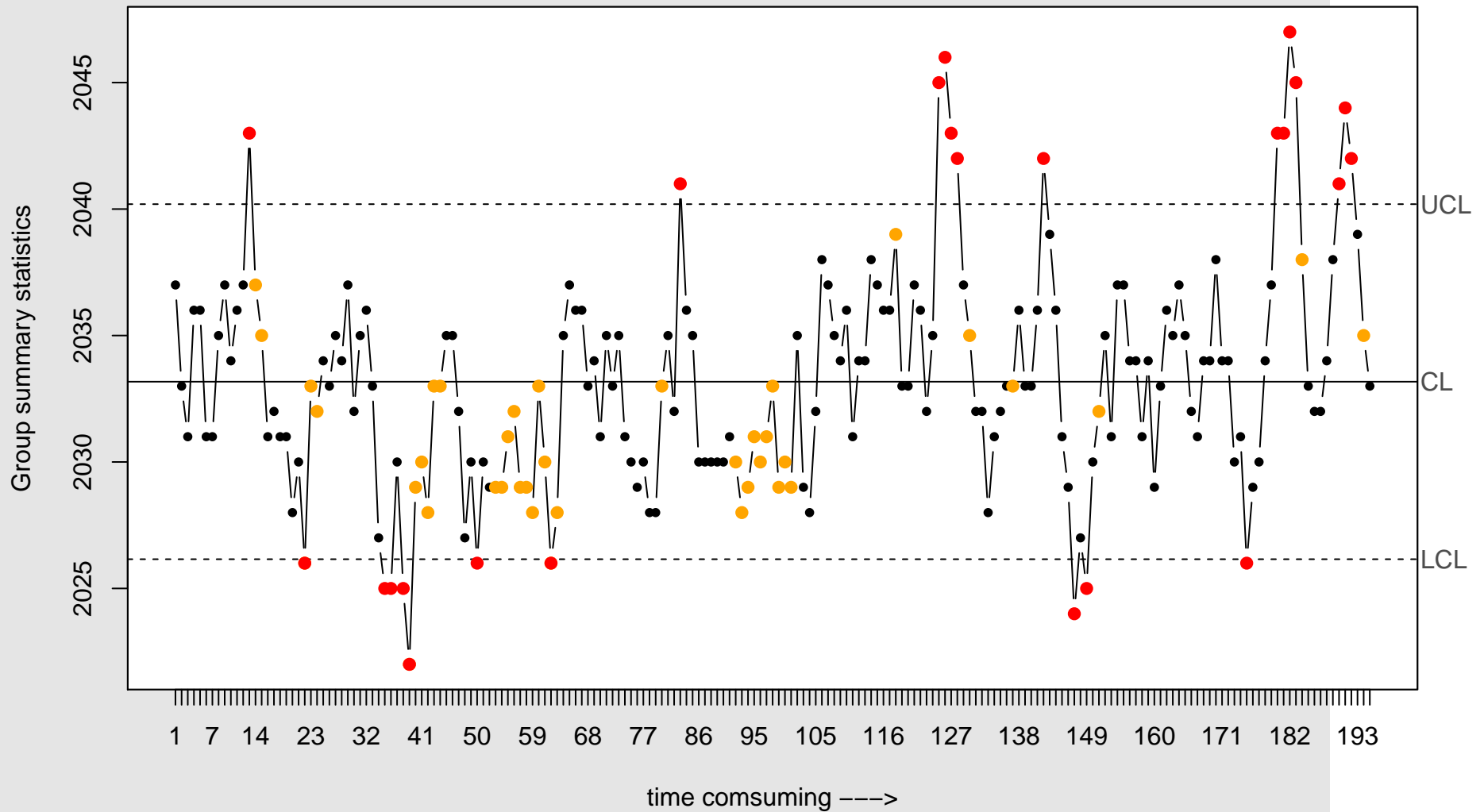
Number of groups = 195  
Center = 2033.462  
StdDev = 2.40367

LCL = 2026.251  
UCL = 2040.673

Number beyond limits = 24  
Number violating runs = 42



# 146th column point of this product

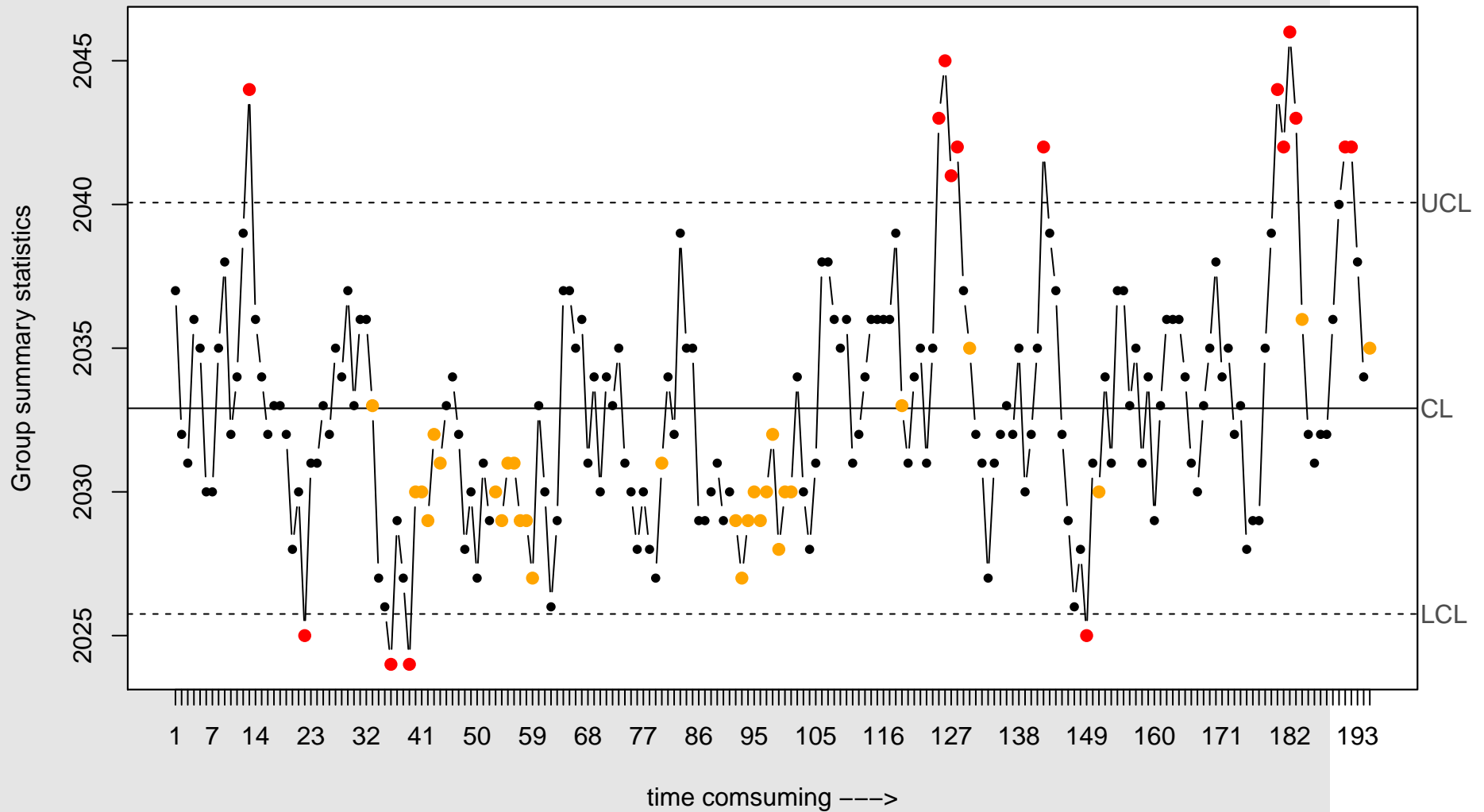


Number of groups = 195  
Center = 2033.174  
StdDev = 2.339694

LCL = 2026.155  
UCL = 2040.193

Number beyond limits = 24  
Number violating runs = 39

# 147th column point of this product



Number of groups = 195

Center = 2032.908

StdDev = 2.385392

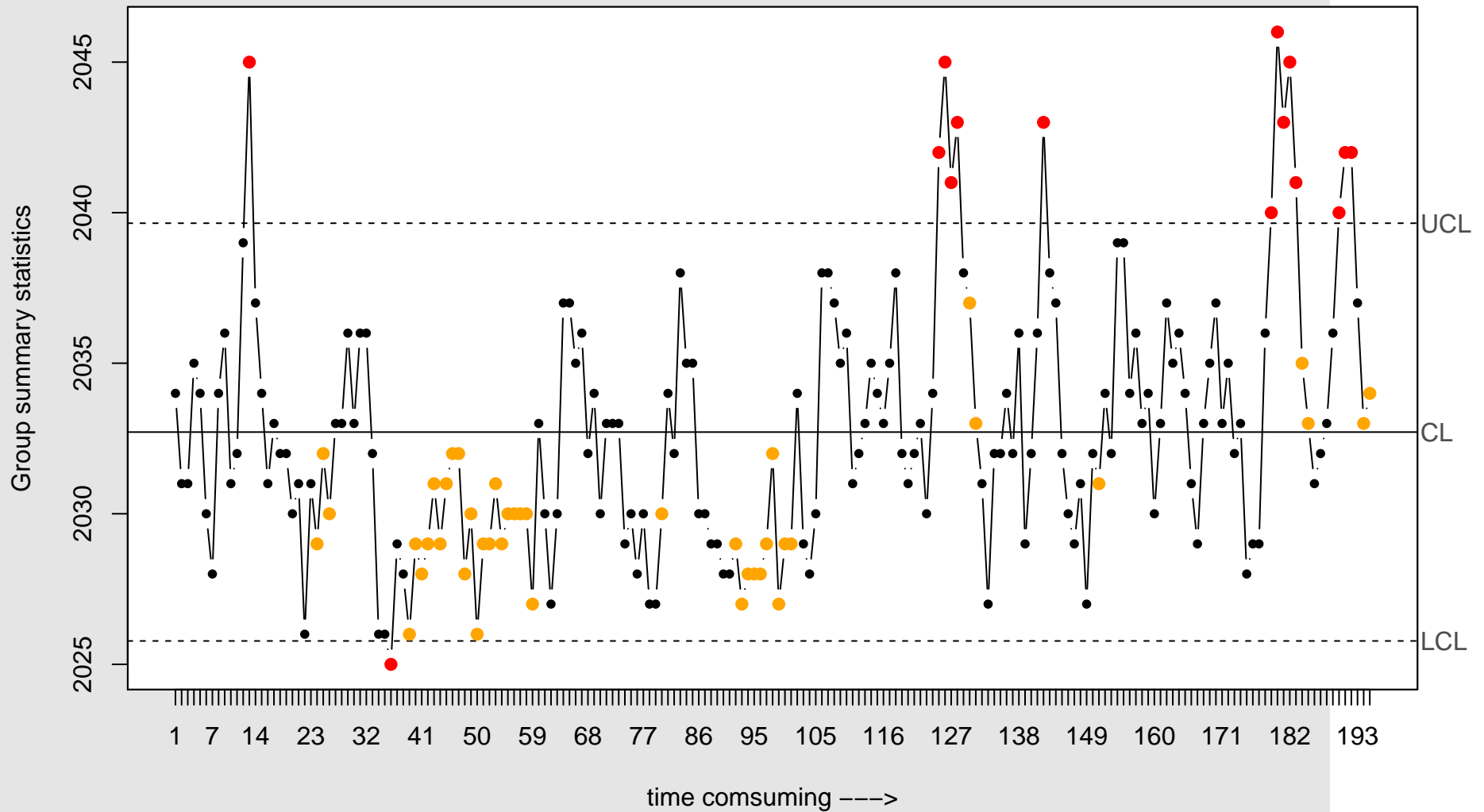
LCL = 2025.752

UCL = 2040.064

Number beyond limits = 16

Number violating runs = 29

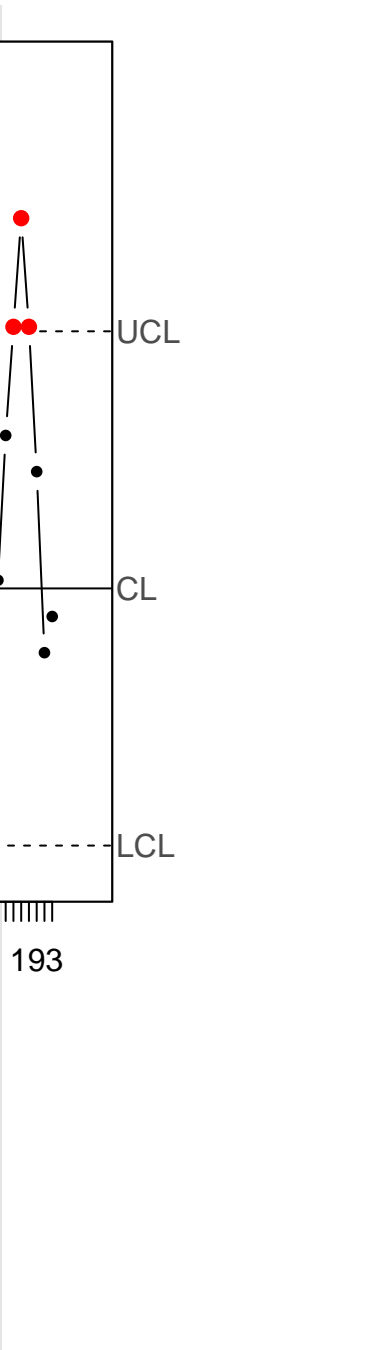
# 148th column point of this product



Number of groups = 195  
Center = 2032.713  
StdDev = 2.312276

LCL = 2025.776  
UCL = 2039.65

Number beyond limits = 15  
Number violating runs = 42

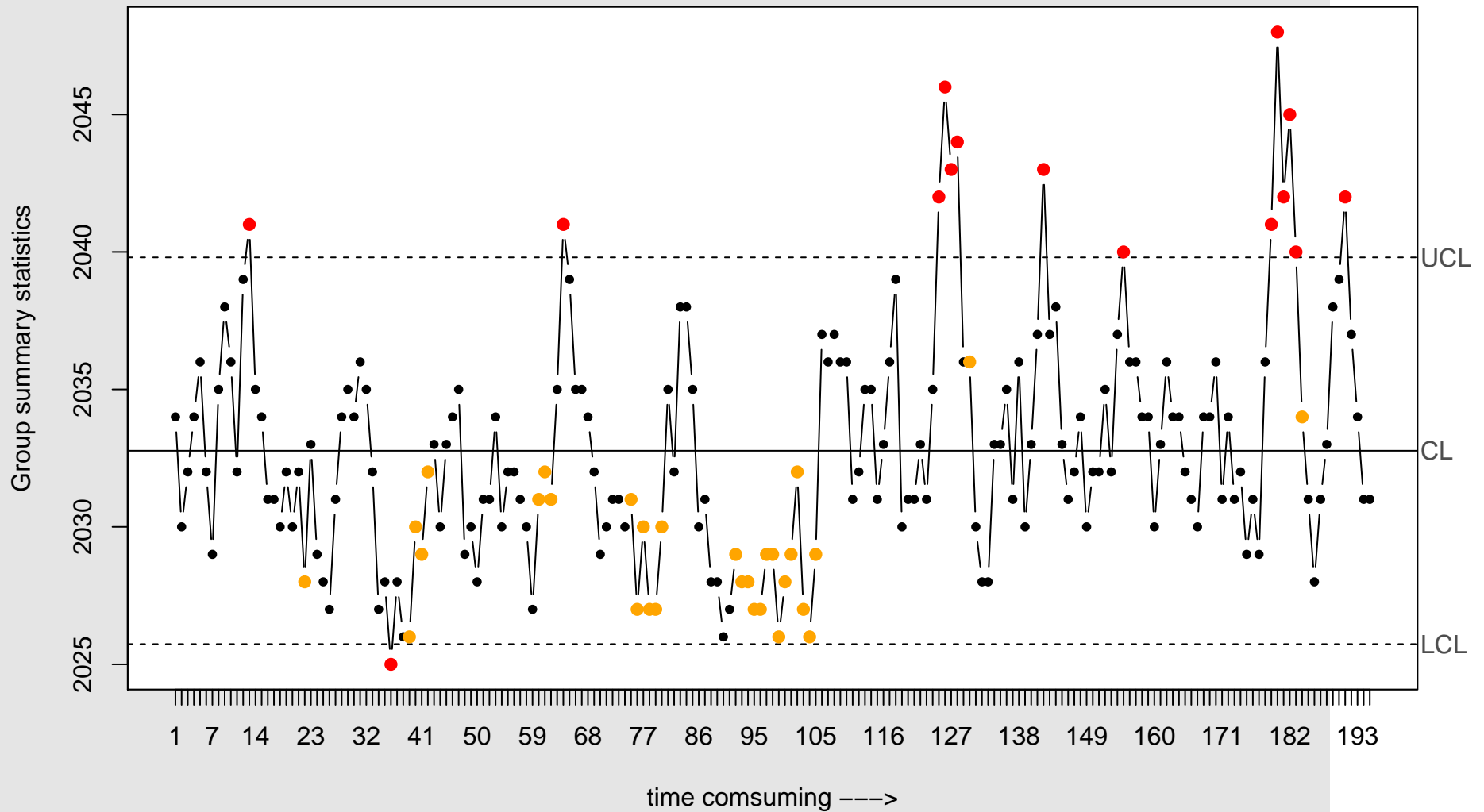


Number of groups = 195  
Center = 2032.774  
StdDev = 2.367113

LCL = 2025.673  
UCL = 2039.876

Number beyond limits = 15  
Number violating runs = 33

# 150th column point of this product



Number of groups = 195

Center = 2032.769

StdDev = 2.344264

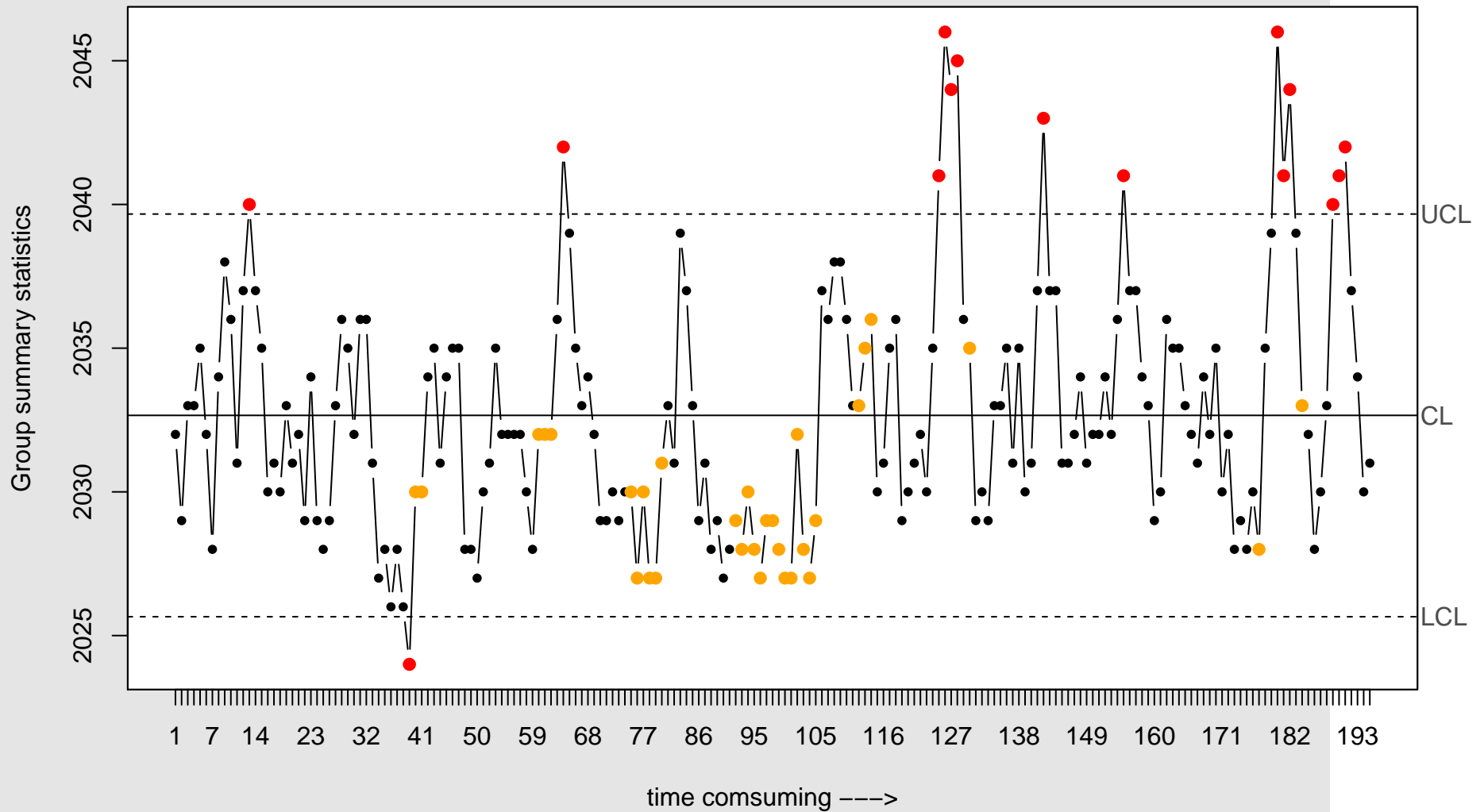
LCL = 2025.736

UCL = 2039.802

Number beyond limits = 15

Number violating runs = 30

# 151th column point of this product



Number of groups = 195

Center = 2032.662

StdDev = 2.335125

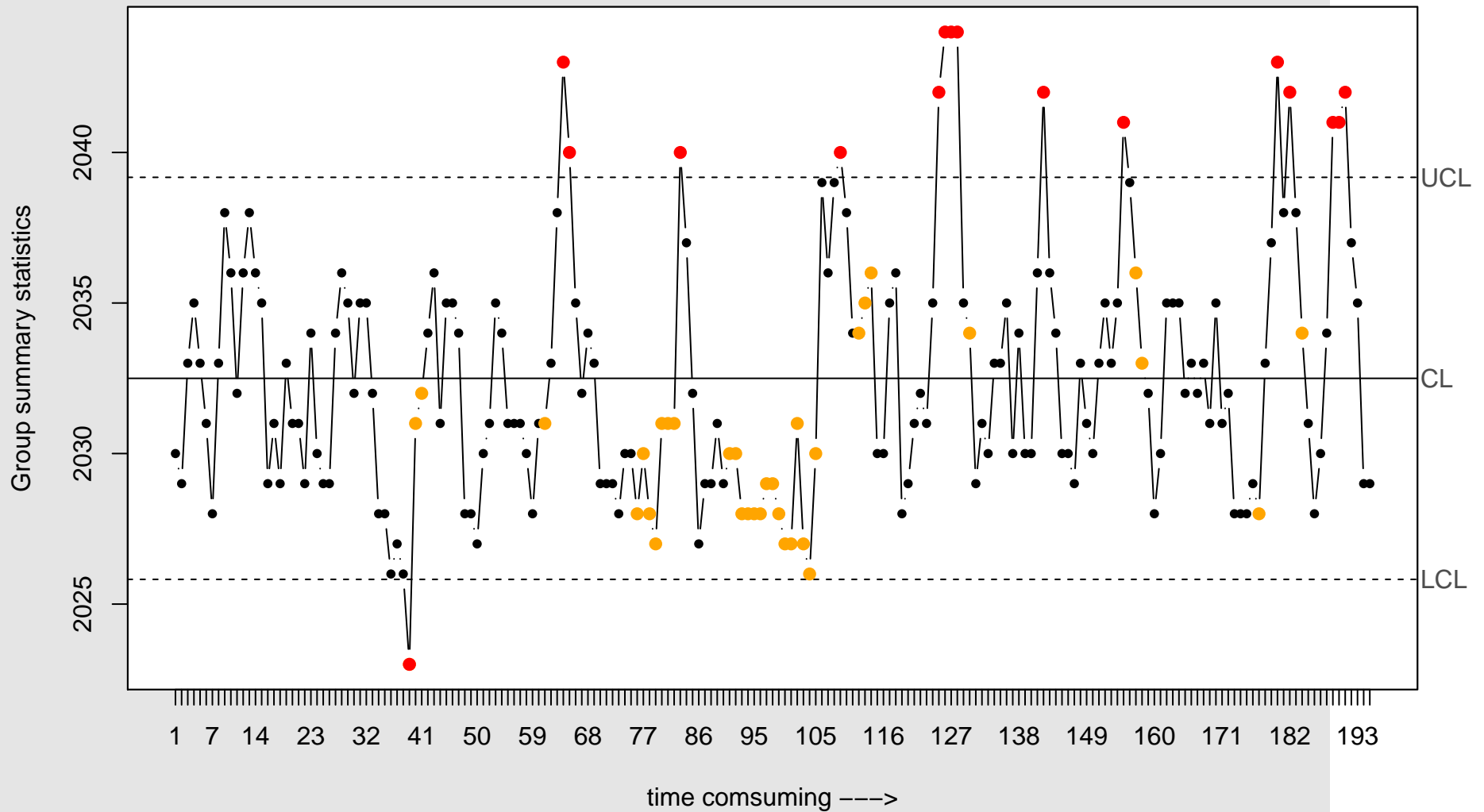
LCL = 2025.656

UCL = 2039.667

Number beyond limits = 15

Number violating runs = 32

# 152th column point of this product



Number of groups = 195

Center = 2032.497

StdDev = 2.225451

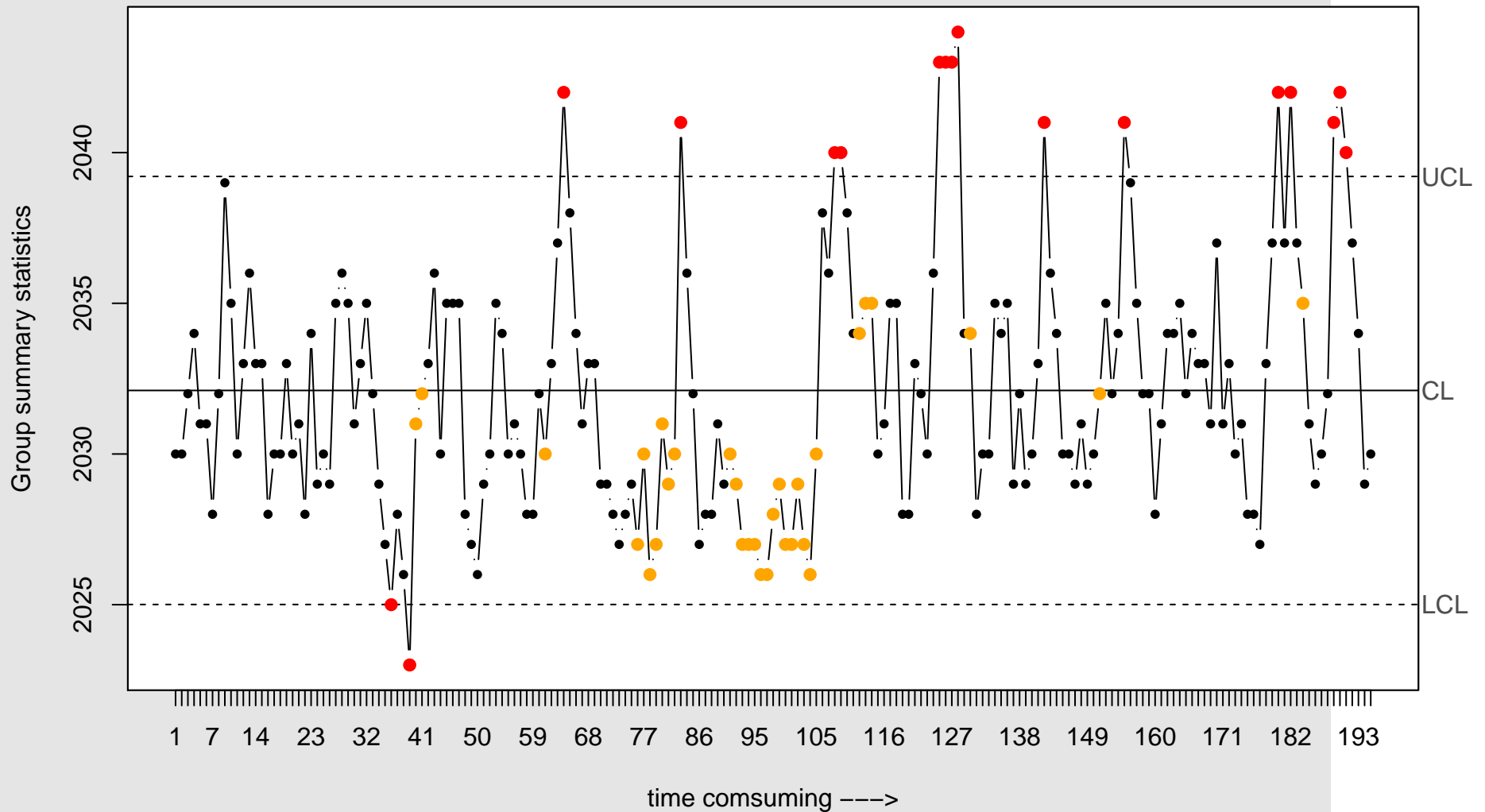
LCL = 2025.821

UCL = 2039.174

Number beyond limits = 16

Number violating runs = 34

# 153th column point of this product



Number of groups = 195

Center = 2032.108

StdDev = 2.367113

LCL = 2025.006

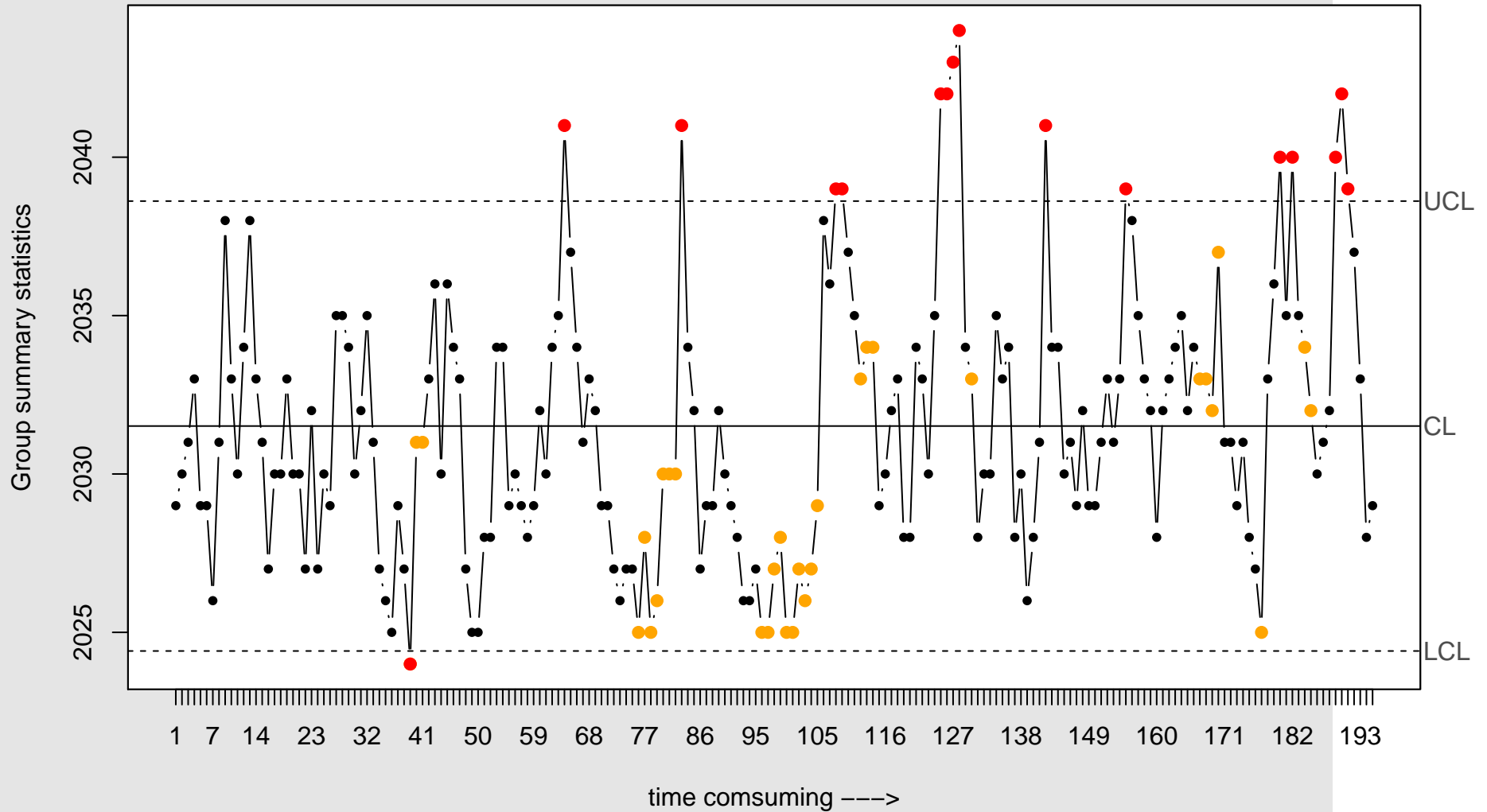
UCL = 2039.209

Number beyond limits = 17

Number violating runs = 32



# 154th column point of this product



Number of groups = 195

Center = 2031.513

StdDev = 2.367113

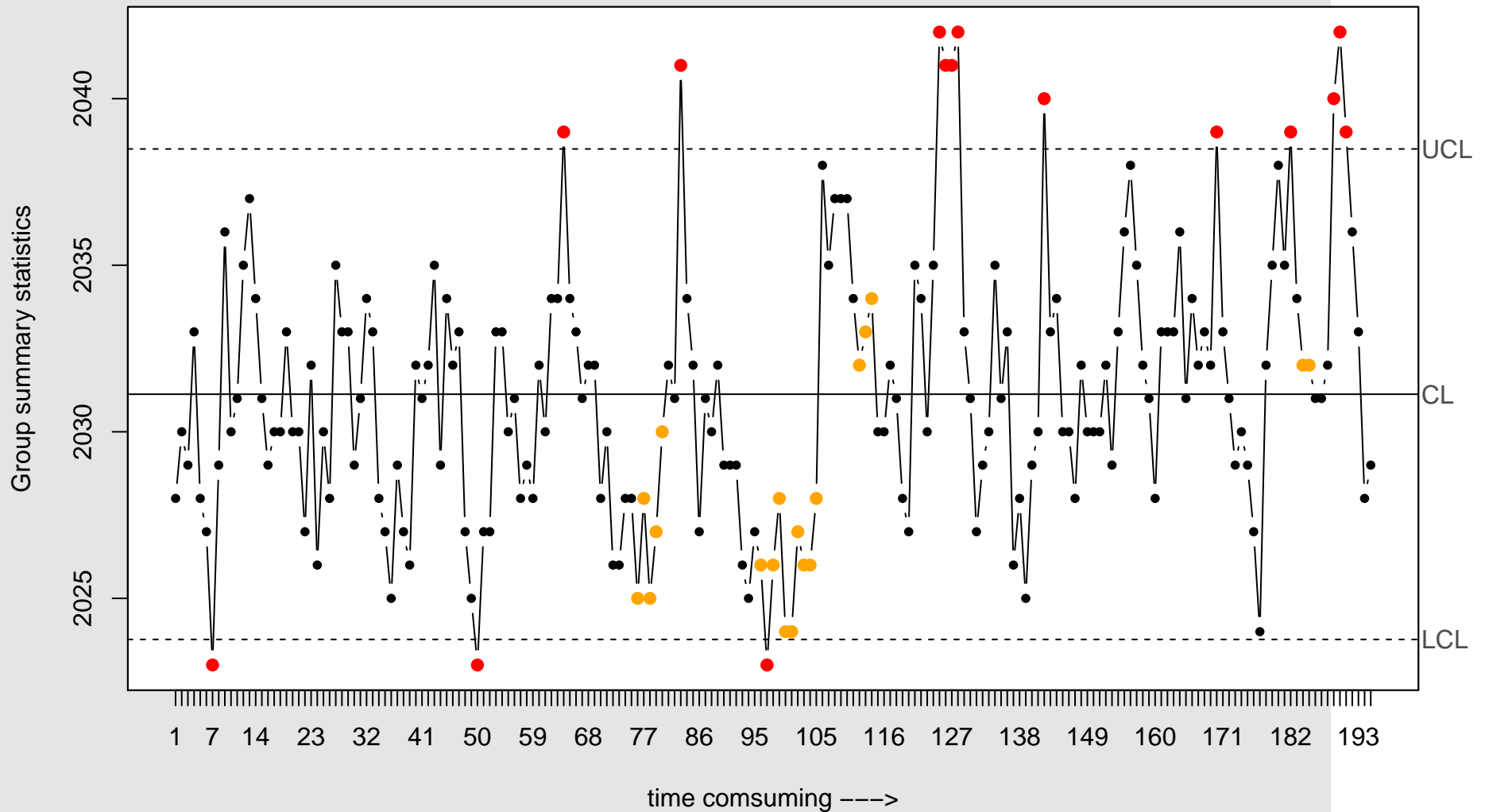
LCL = 2024.411

UCL = 2038.614

Number beyond limits = 16

Number violating runs = 31

# 155th column point of this product

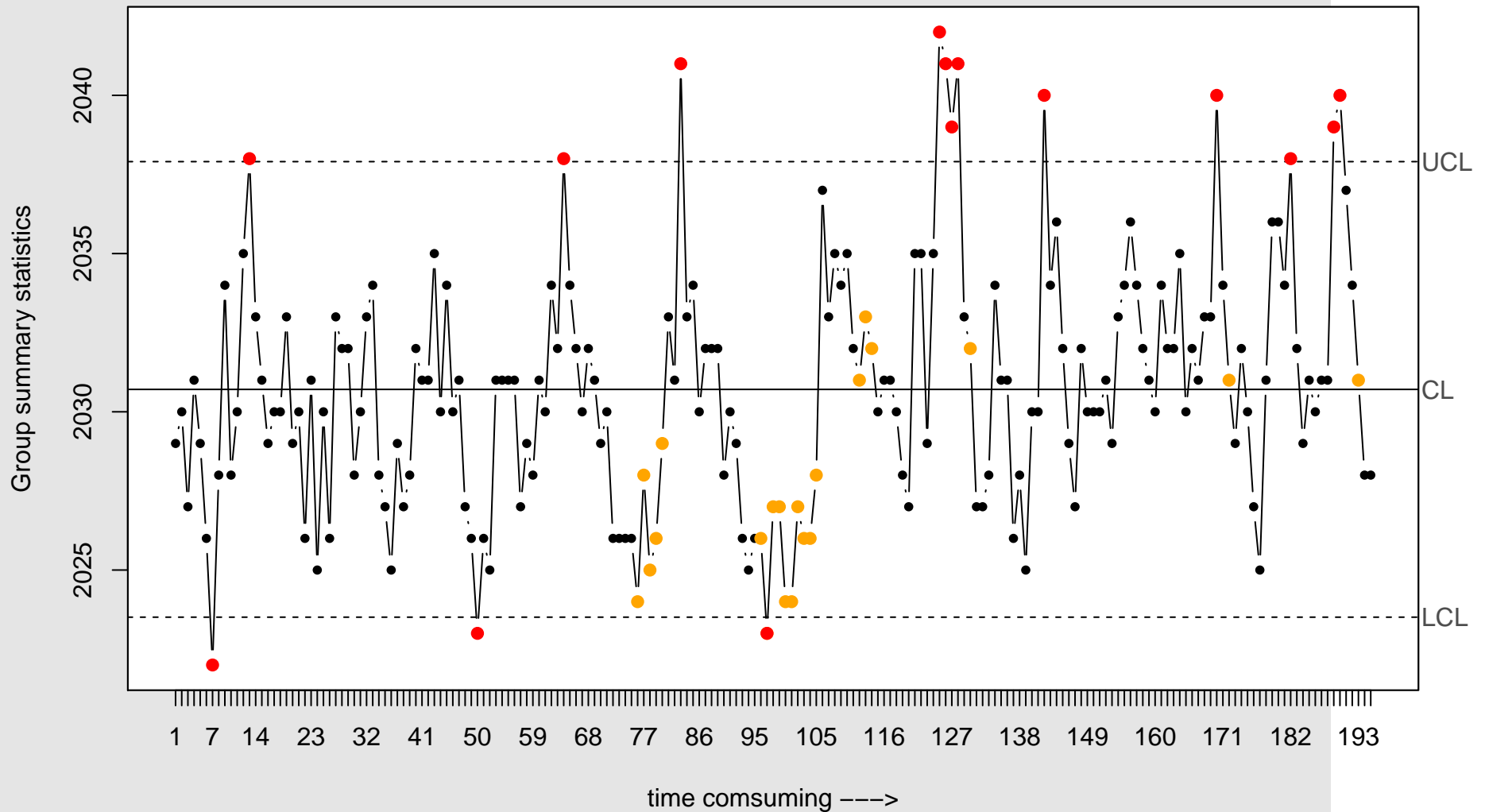


Number of groups = 195  
Center = 2031.128  
StdDev = 2.453937

LCL = 2023.766  
UCL = 2038.49

Number beyond limits = 15  
Number violating runs = 20

# 156th column point of this product

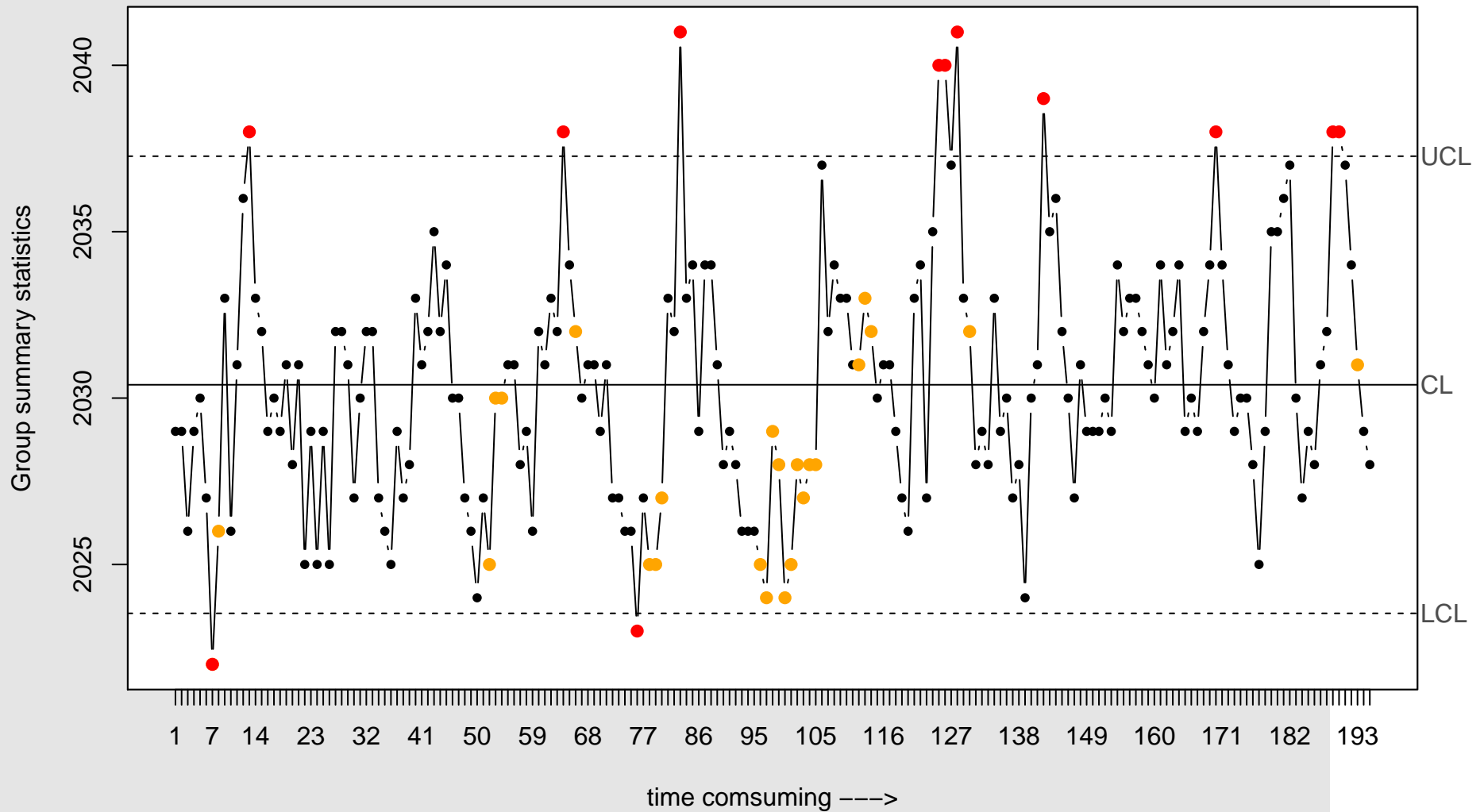


Number of groups = 195  
Center = 2030.708  
StdDev = 2.399101

LCL = 2023.51  
UCL = 2037.905

Number beyond limits = 15  
Number violating runs = 21

# 157th column point of this product



Number of groups = 195

Center = 2030.4

StdDev = 2.289428

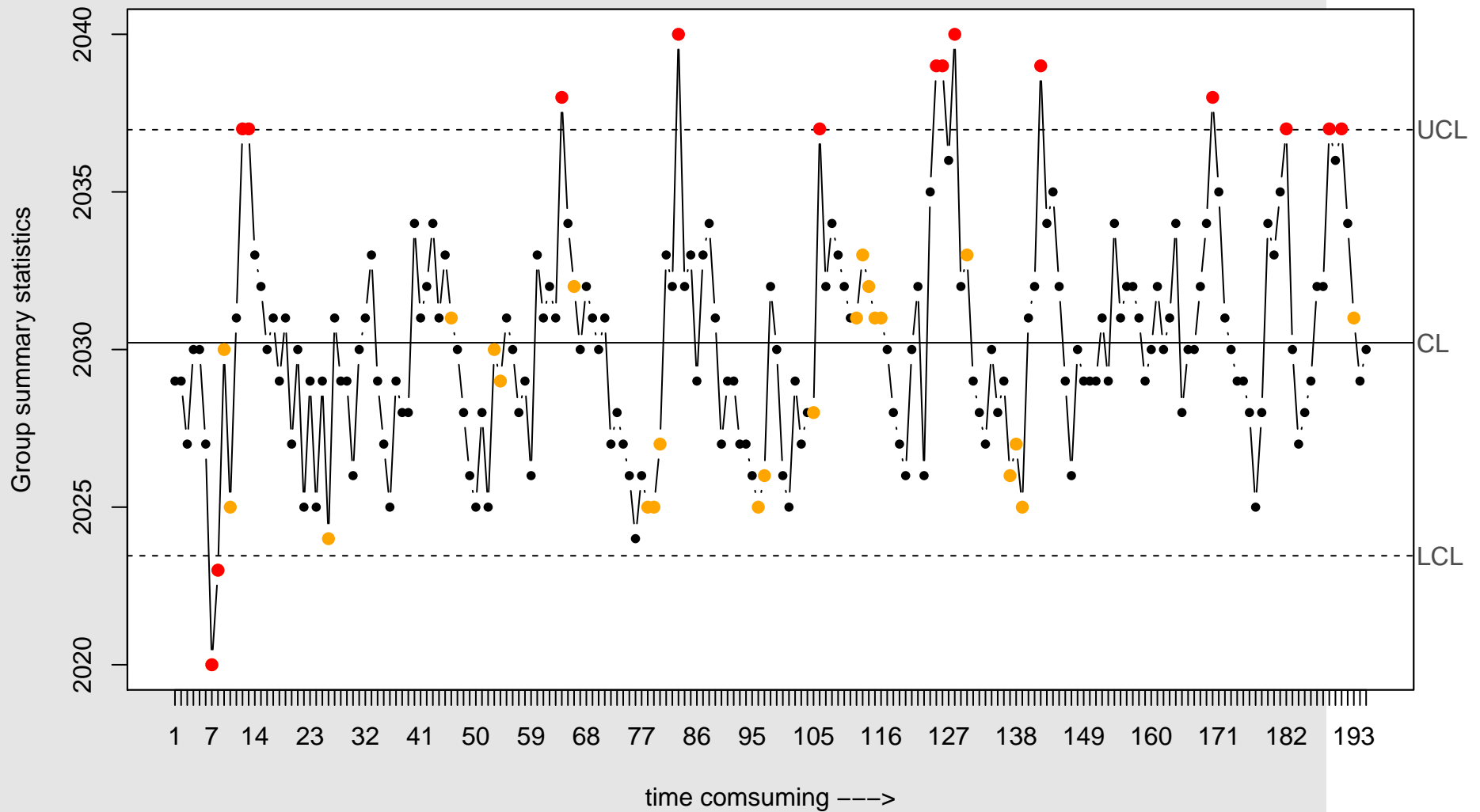
LCL = 2023.532

UCL = 2037.268

Number beyond limits = 12

Number violating runs = 24

# 158th column point of this product

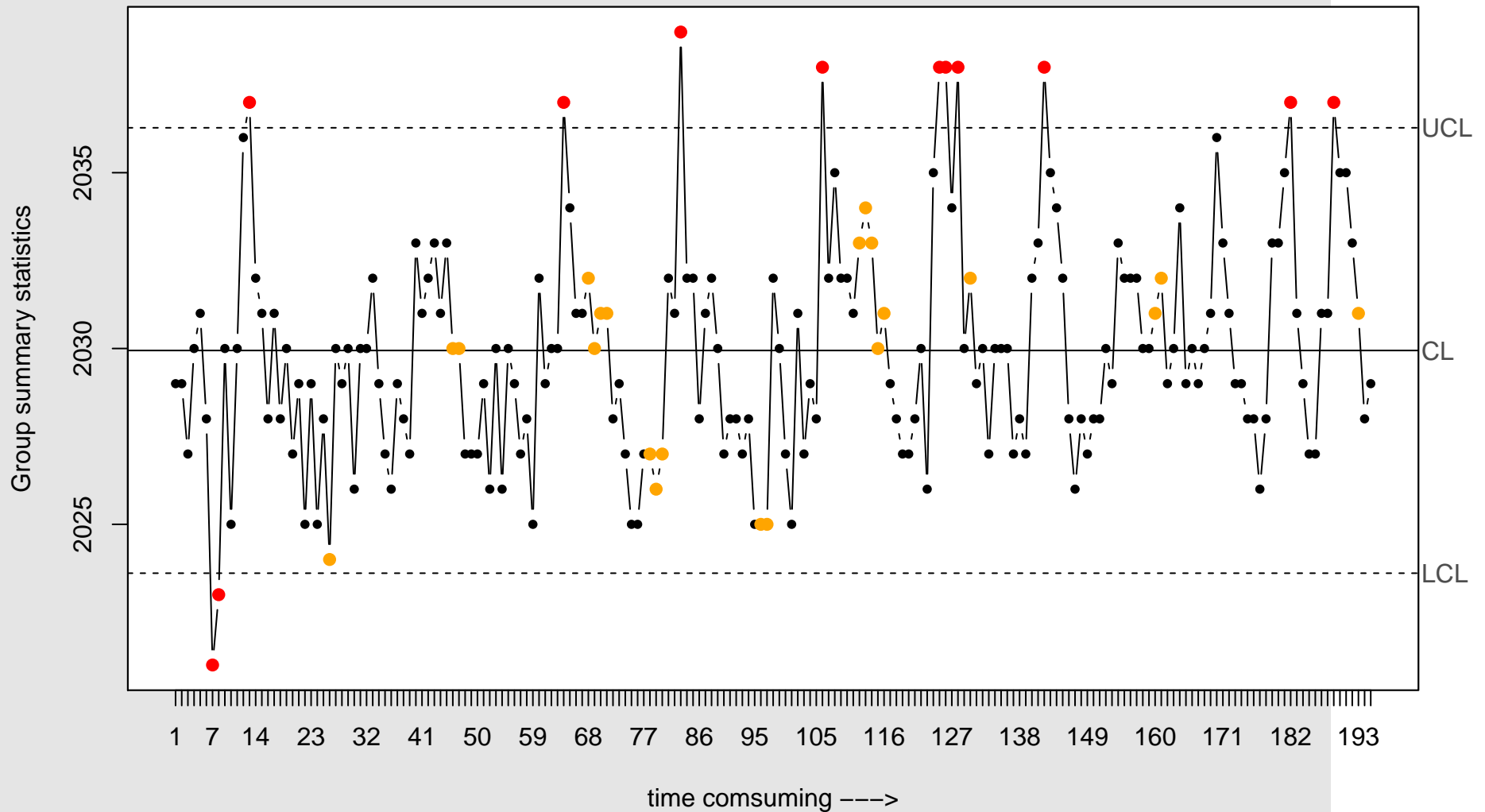


Number of groups = 195  
Center = 2030.215  
StdDev = 2.25287

LCL = 2023.457  
UCL = 2036.974

Number beyond limits = 15  
Number violating runs = 25

# 159th column point of this product



Number of groups = 195

Center = 2029.944

StdDev = 2.111209

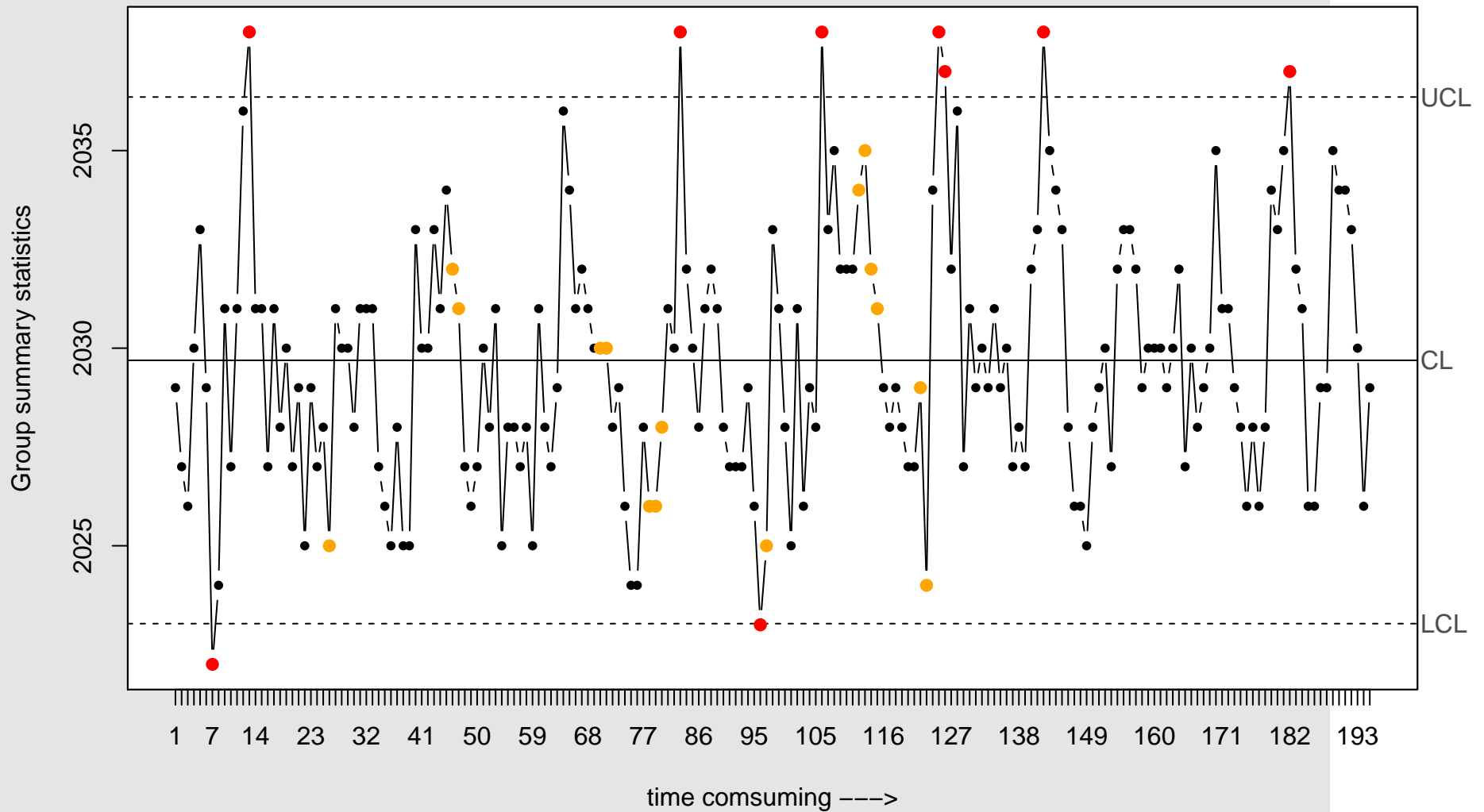
LCL = 2023.61

UCL = 2036.277

Number beyond limits = 12

Number violating runs = 21

# 160th column point of this product



Number of groups = 195

Center = 2029.692

StdDev = 2.220882

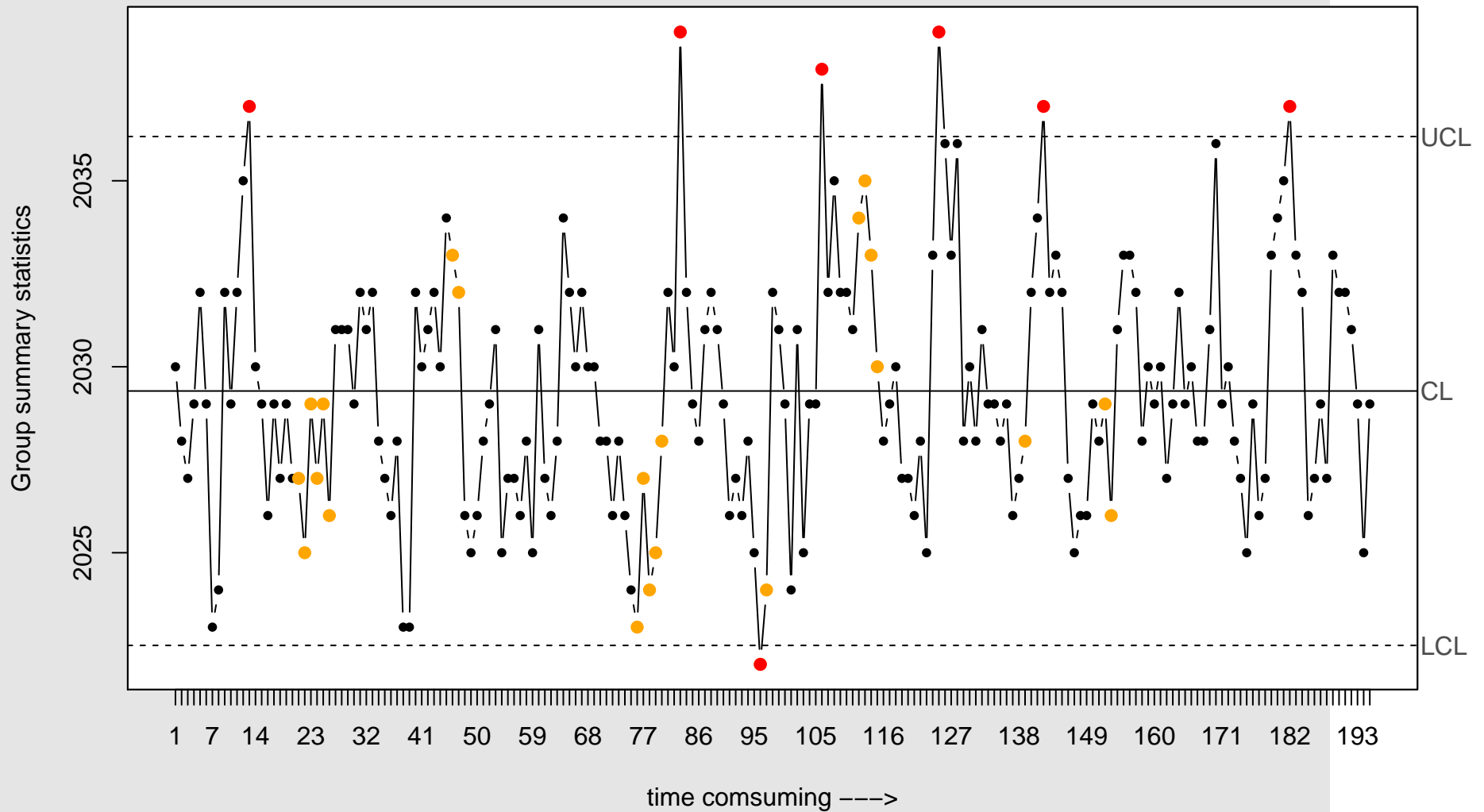
LCL = 2023.03

UCL = 2036.355

Number beyond limits = 9

Number violating runs = 16

# 161th column point of this product



Number of groups = 195

Center = 2029.349

StdDev = 2.280288

LCL = 2022.508

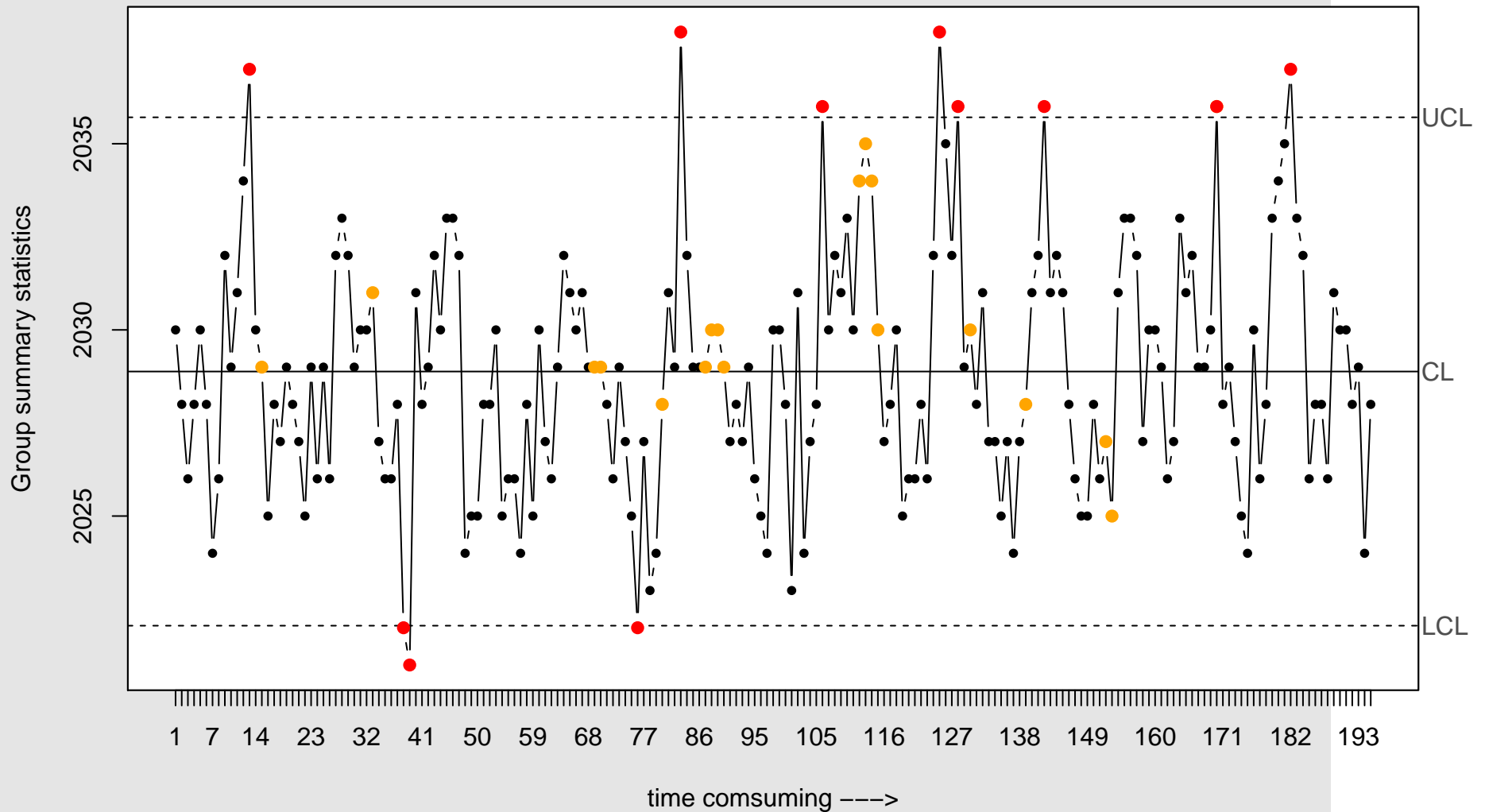
UCL = 2036.19

Number beyond limits = 7

Number violating runs = 22



# 162th column point of this product



Number of groups = 195

Center = 2028.882

StdDev = 2.275718

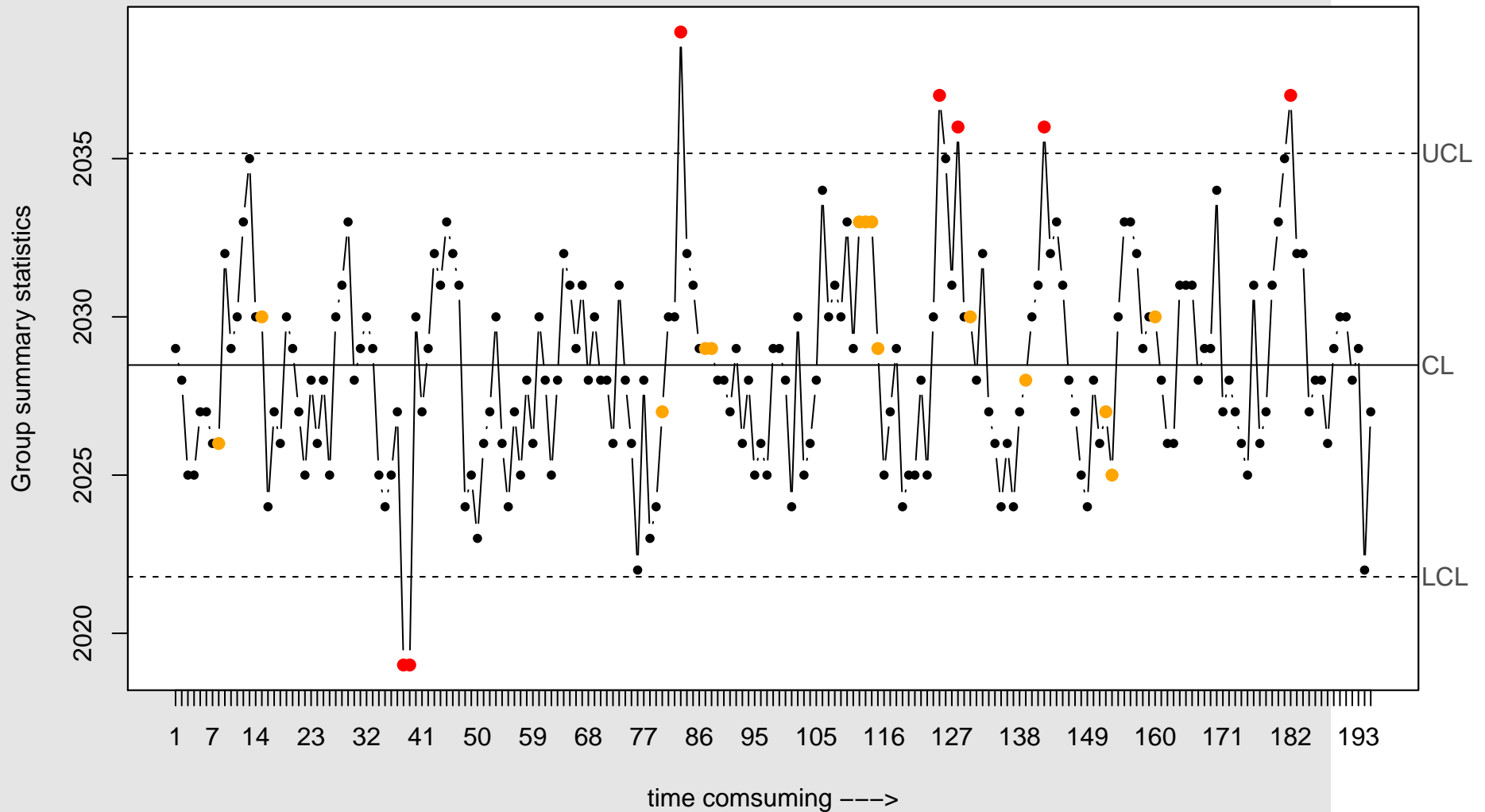
LCL = 2022.055

UCL = 2035.709

Number beyond limits = 11

Number violating runs = 18

### 163th column point of this product

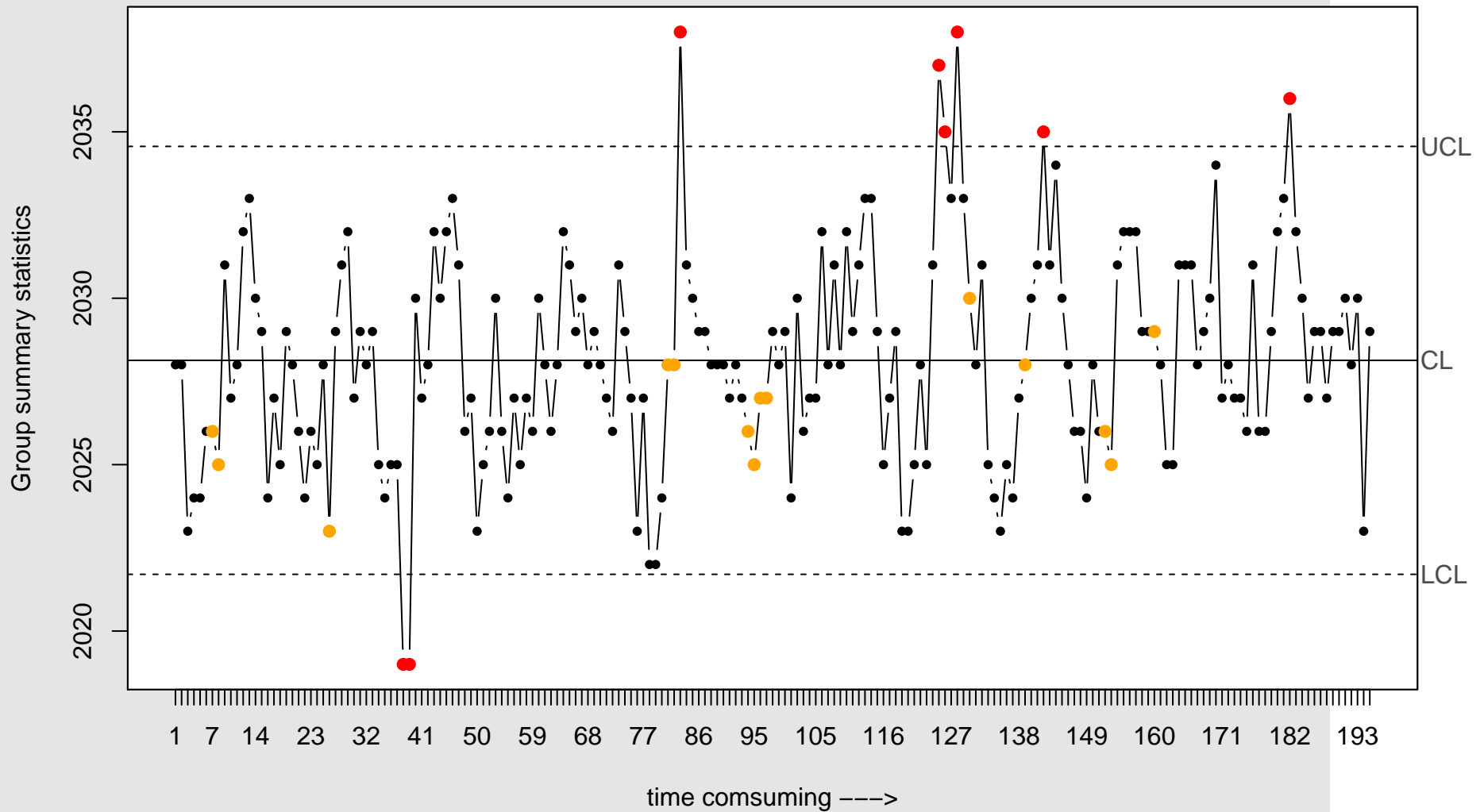


Number of groups = 195  
Center = 2028.477  
StdDev = 2.230021

LCL = 2021.787  
UCL = 2035.167

Number beyond limits = 7  
Number violating runs = 14

# 164th column point of this product

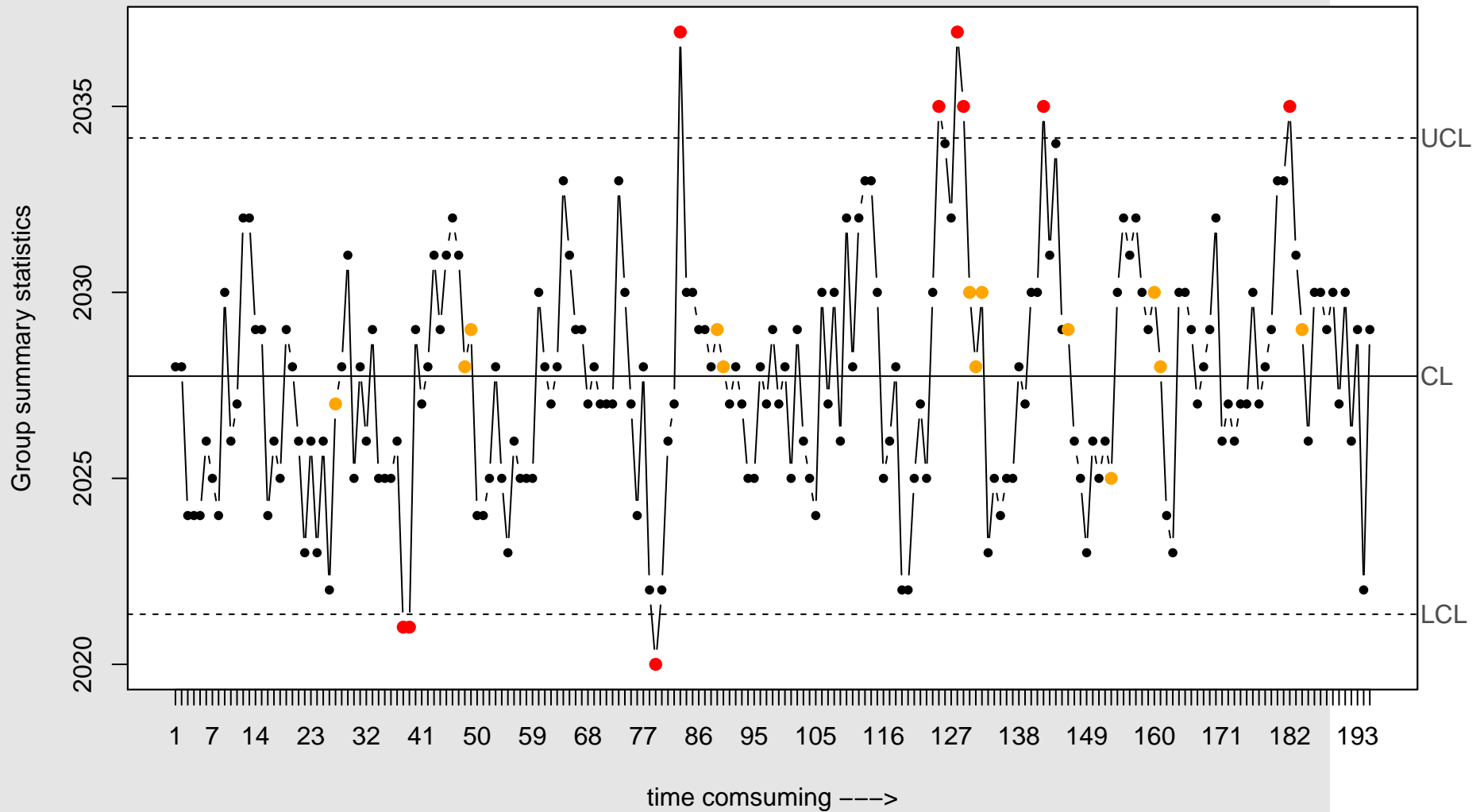


Number of groups = 195  
Center = 2028.133  
StdDev = 2.143197

LCL = 2021.704  
UCL = 2034.563

Number beyond limits = 8  
Number violating runs = 14

# 165th column point of this product



Number of groups = 195

Center = 2027.749

StdDev = 2.134057

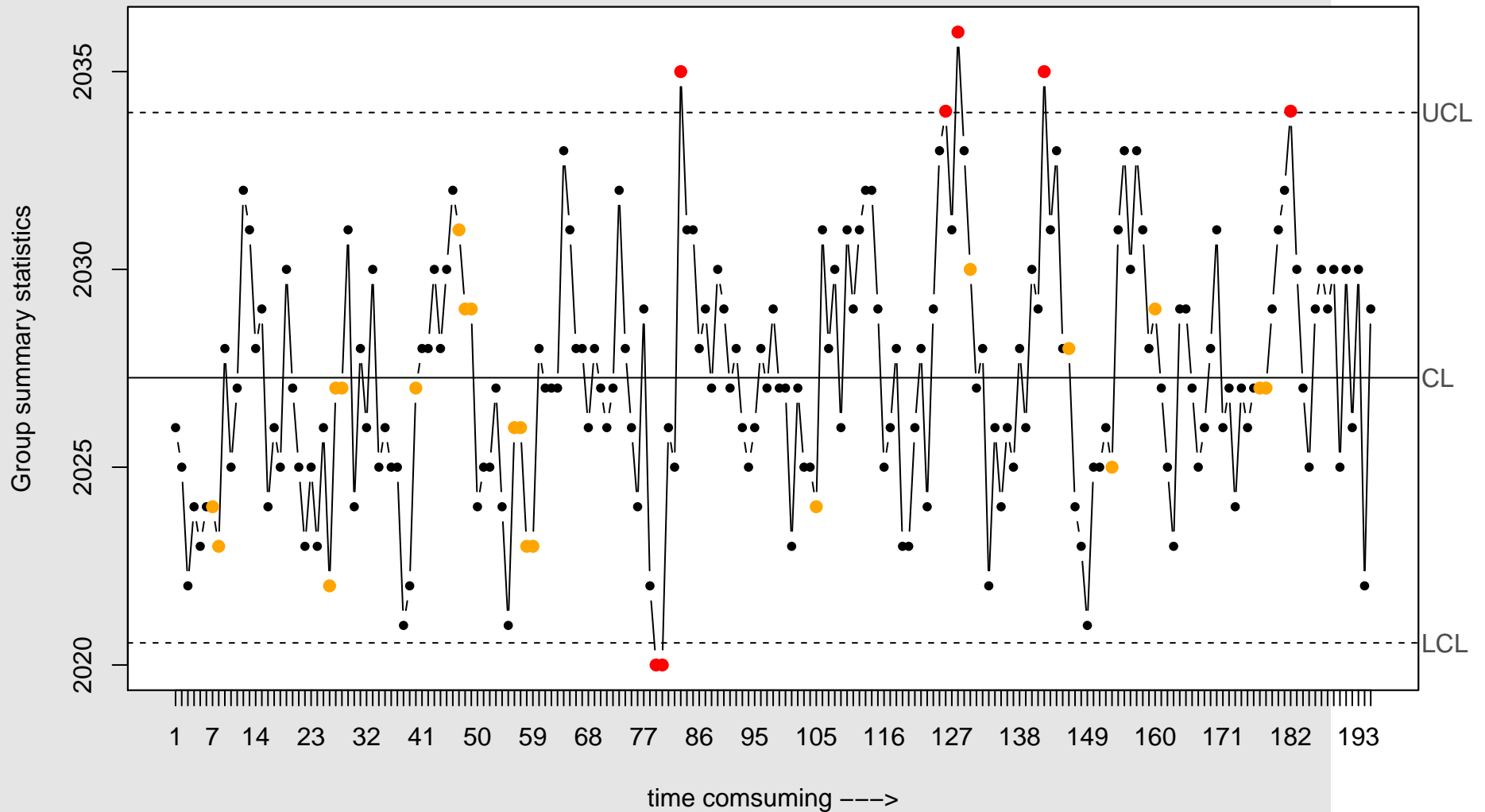
LCL = 2021.347

UCL = 2034.151

Number beyond limits = 9

Number violating runs = 13

# 166th column point of this product

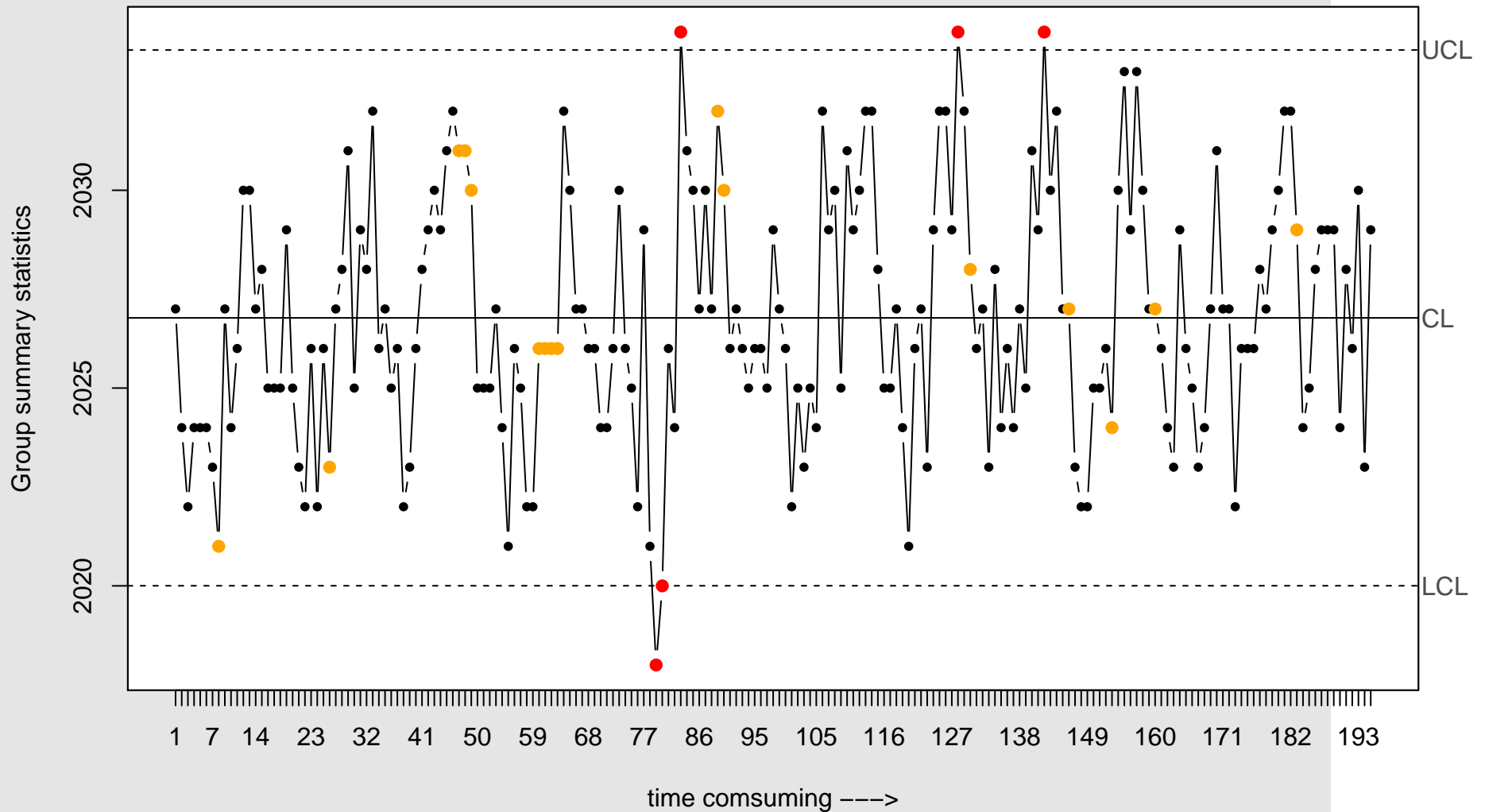


Number of groups = 195  
Center = 2027.262  
StdDev = 2.234591

LCL = 2020.558  
UCL = 2033.965

Number beyond limits = 7  
Number violating runs = 20

# 167th column point of this product



Number of groups = 195

Center = 2026.774

StdDev = 2.257439

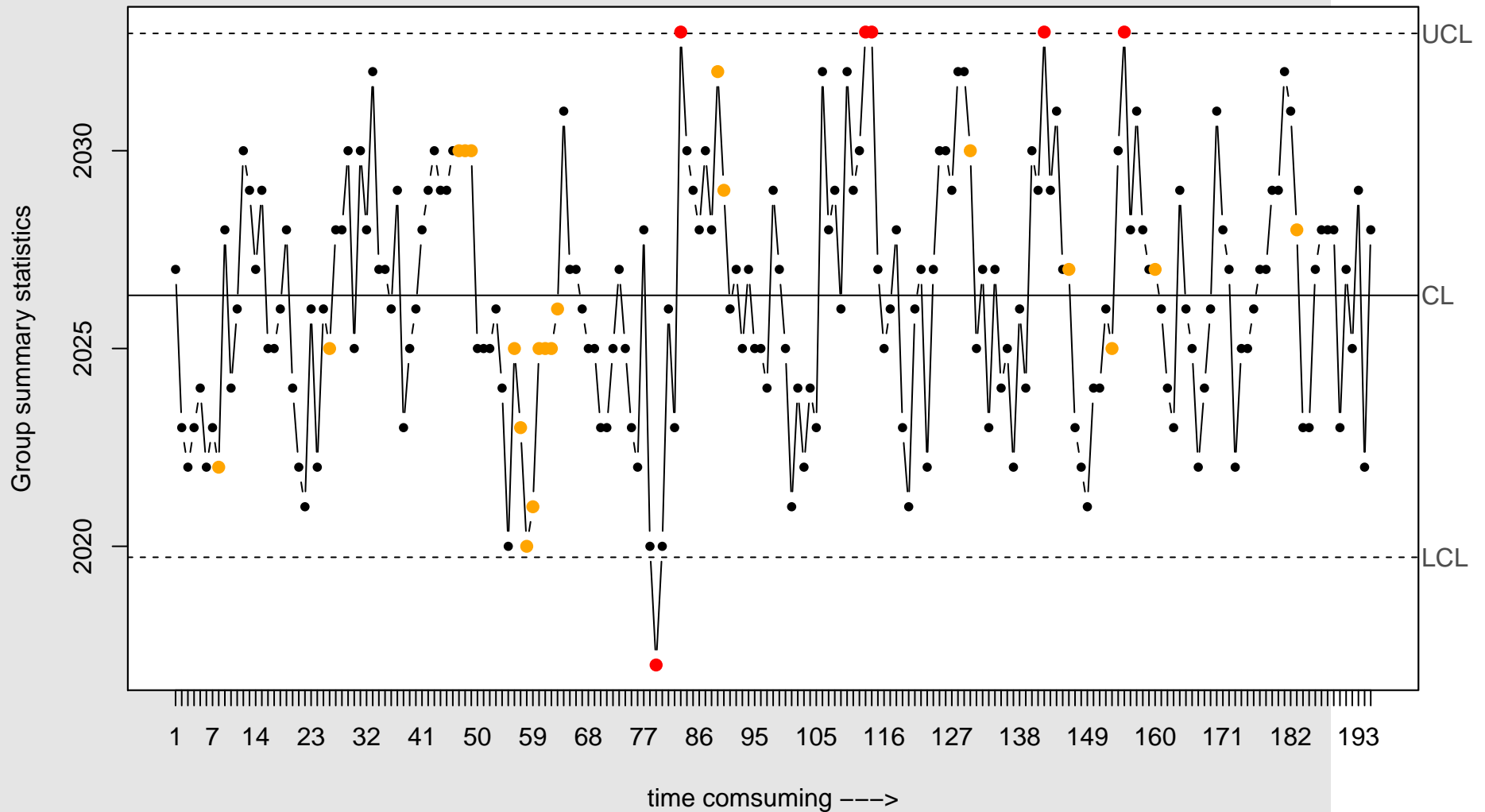
LCL = 2020.002

UCL = 2033.547

Number beyond limits = 5

Number violating runs = 16

# 168th column point of this product



Number of groups = 195

Center = 2026.344

StdDev = 2.207173

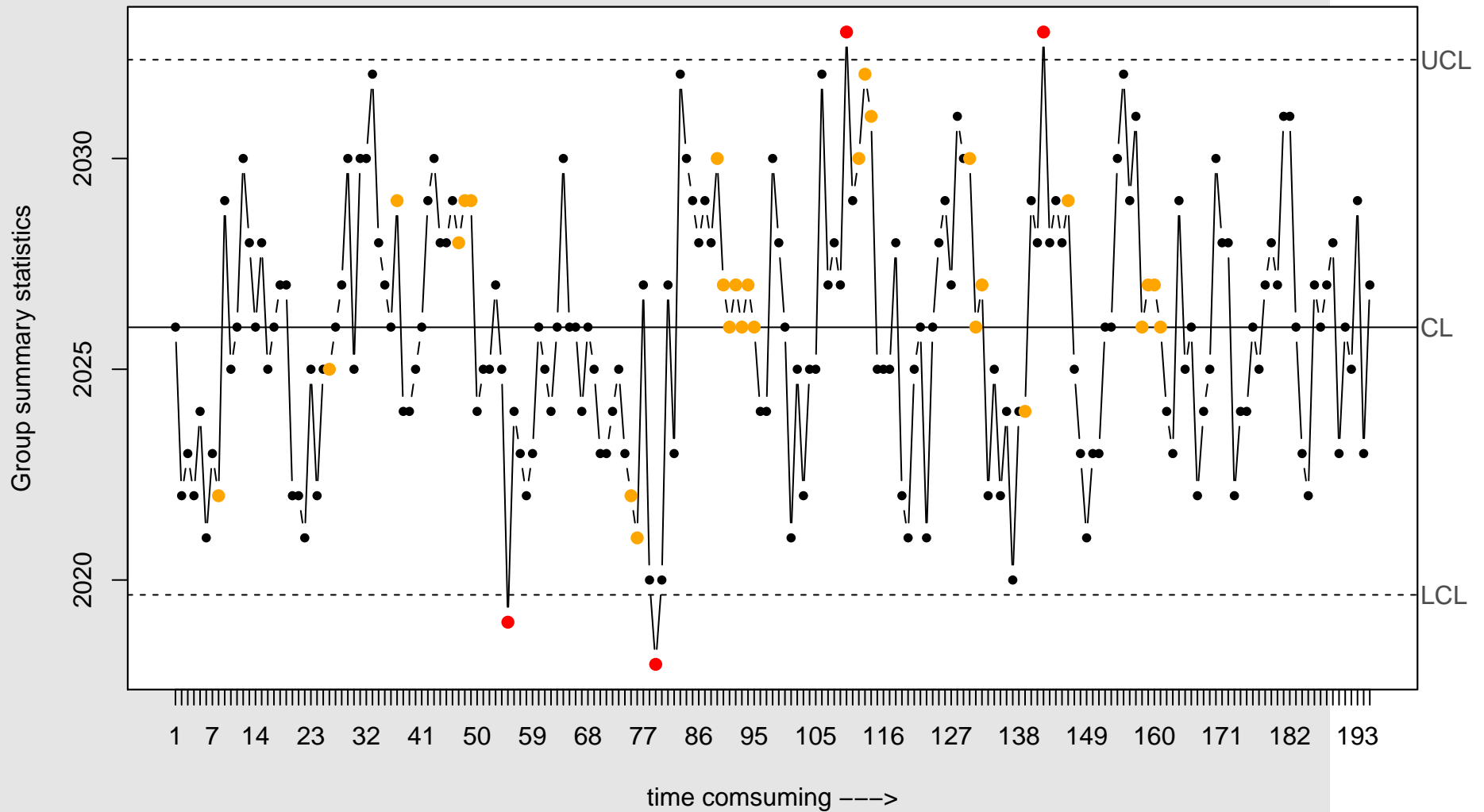
LCL = 2019.722

UCL = 2032.965

Number beyond limits = 6

Number violating runs = 20

# 169th column point of this product



Number of groups = 195

Center = 2025.995

StdDev = 2.115778

LCL = 2019.648

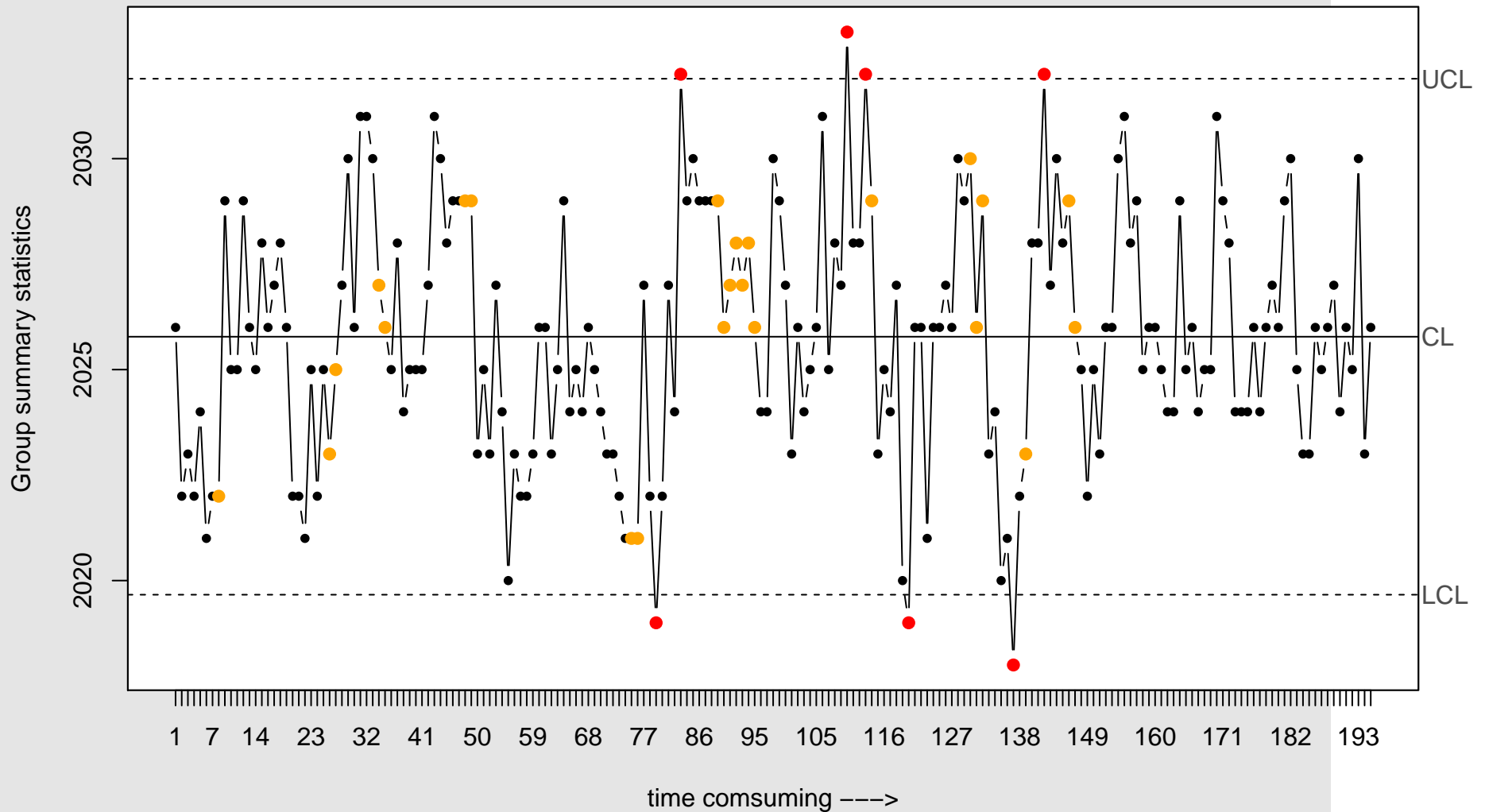
UCL = 2032.342

Number beyond limits = 4

Number violating runs = 27



# 170th column point of this product



Number of groups = 195

Center = 2025.779

StdDev = 2.038093

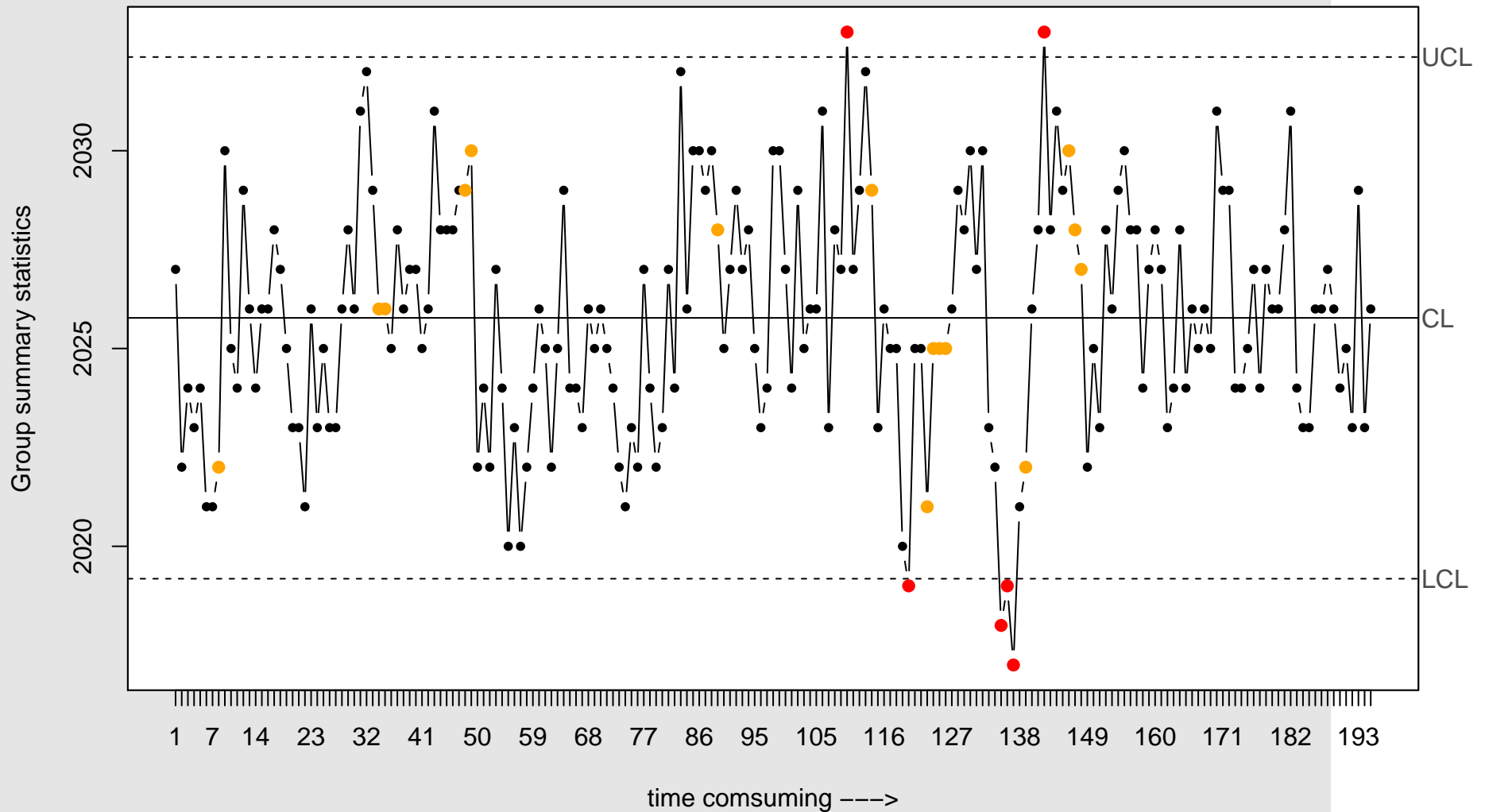
LCL = 2019.665

UCL = 2031.894

Number beyond limits = 7

Number violating runs = 23

# 171th column point of this product



Number of groups = 195

Center = 2025.774

StdDev = 2.198033

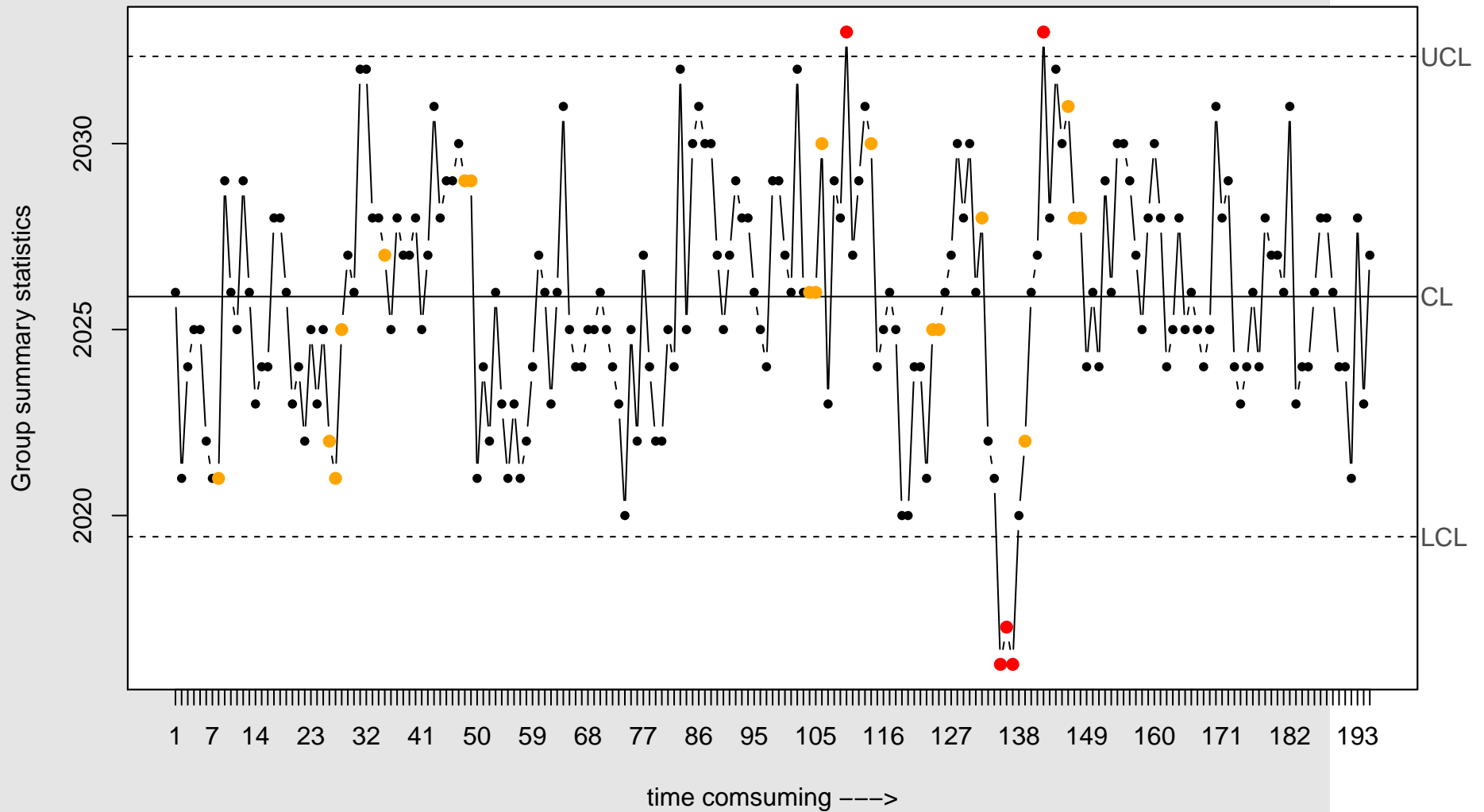
LCL = 2019.18

UCL = 2032.368

Number beyond limits = 6

Number violating runs = 15

# 172th column point of this product



Number of groups = 195

Center = 2025.887

StdDev = 2.152336

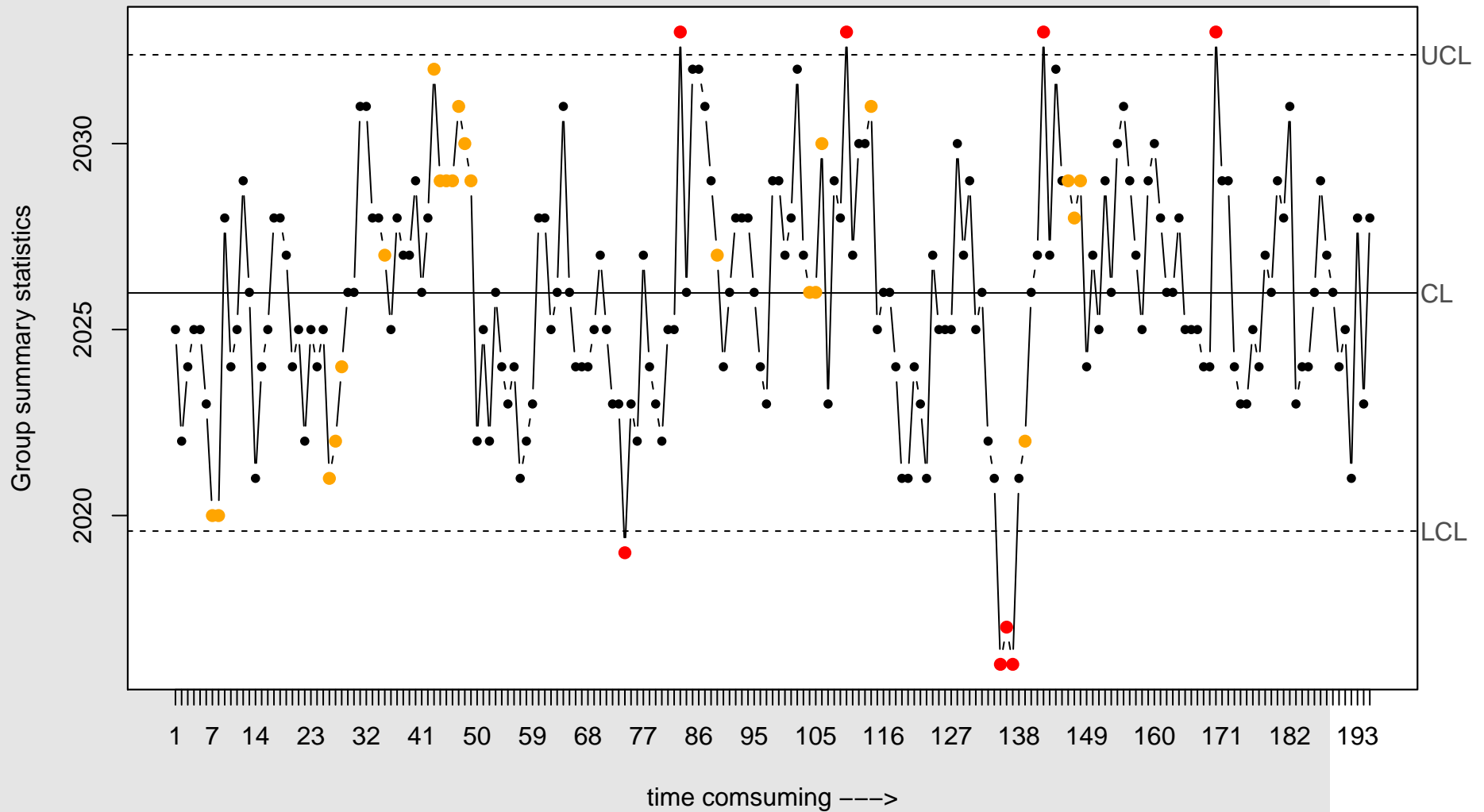
LCL = 2019.43

UCL = 2032.344

Number beyond limits = 5

Number violating runs = 18

# 173th column point of this product



Number of groups = 195

Center = 2025.985

StdDev = 2.134057

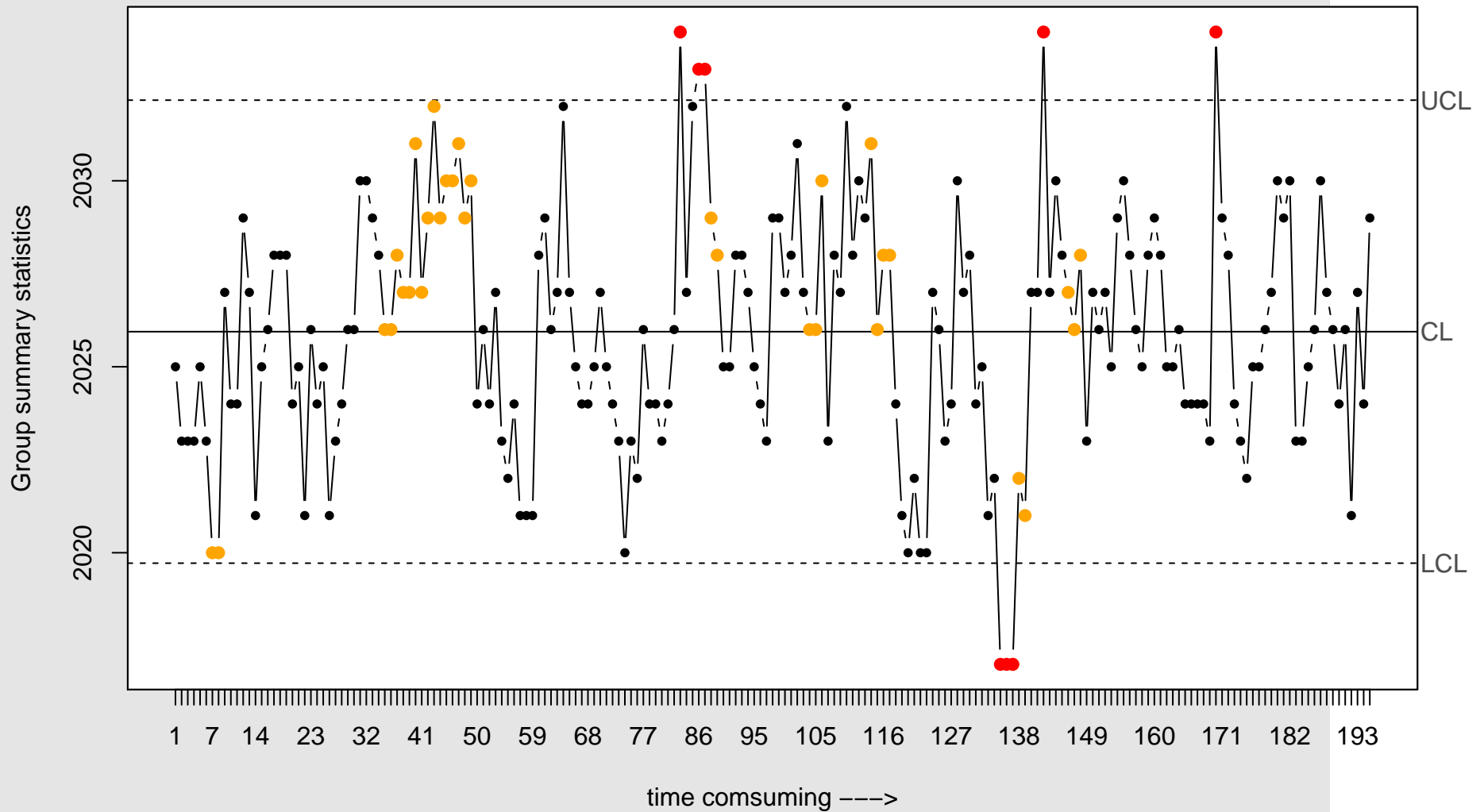
LCL = 2019.582

UCL = 2032.387

Number beyond limits = 8

Number violating runs = 22

# 174th column point of this product



Number of groups = 195

Center = 2025.944

StdDev = 2.074651

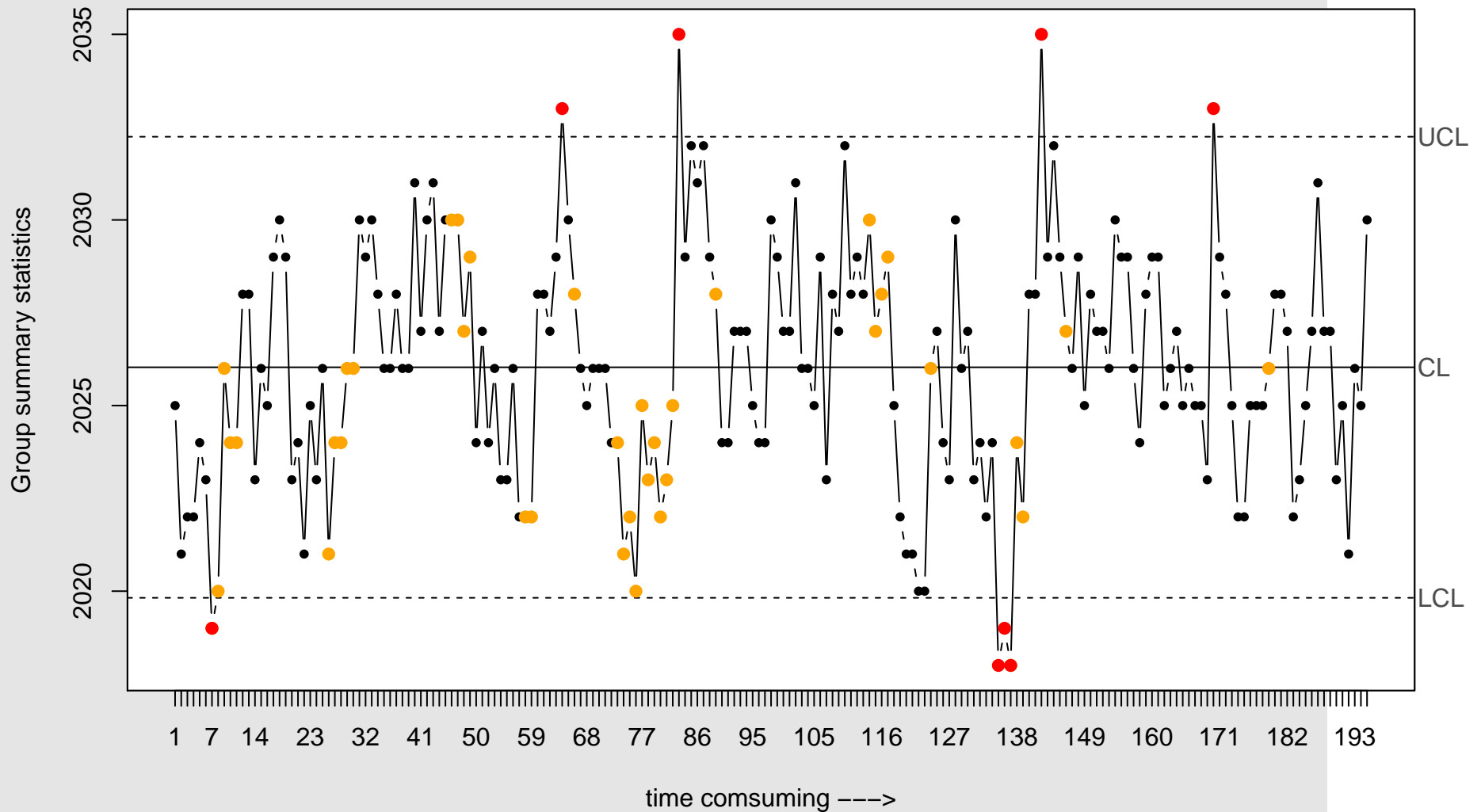
LCL = 2019.72

UCL = 2032.168

Number beyond limits = 8

Number violating runs = 32

# 175th column point of this product



Number of groups = 195

Center = 2026.031

StdDev = 2.070081

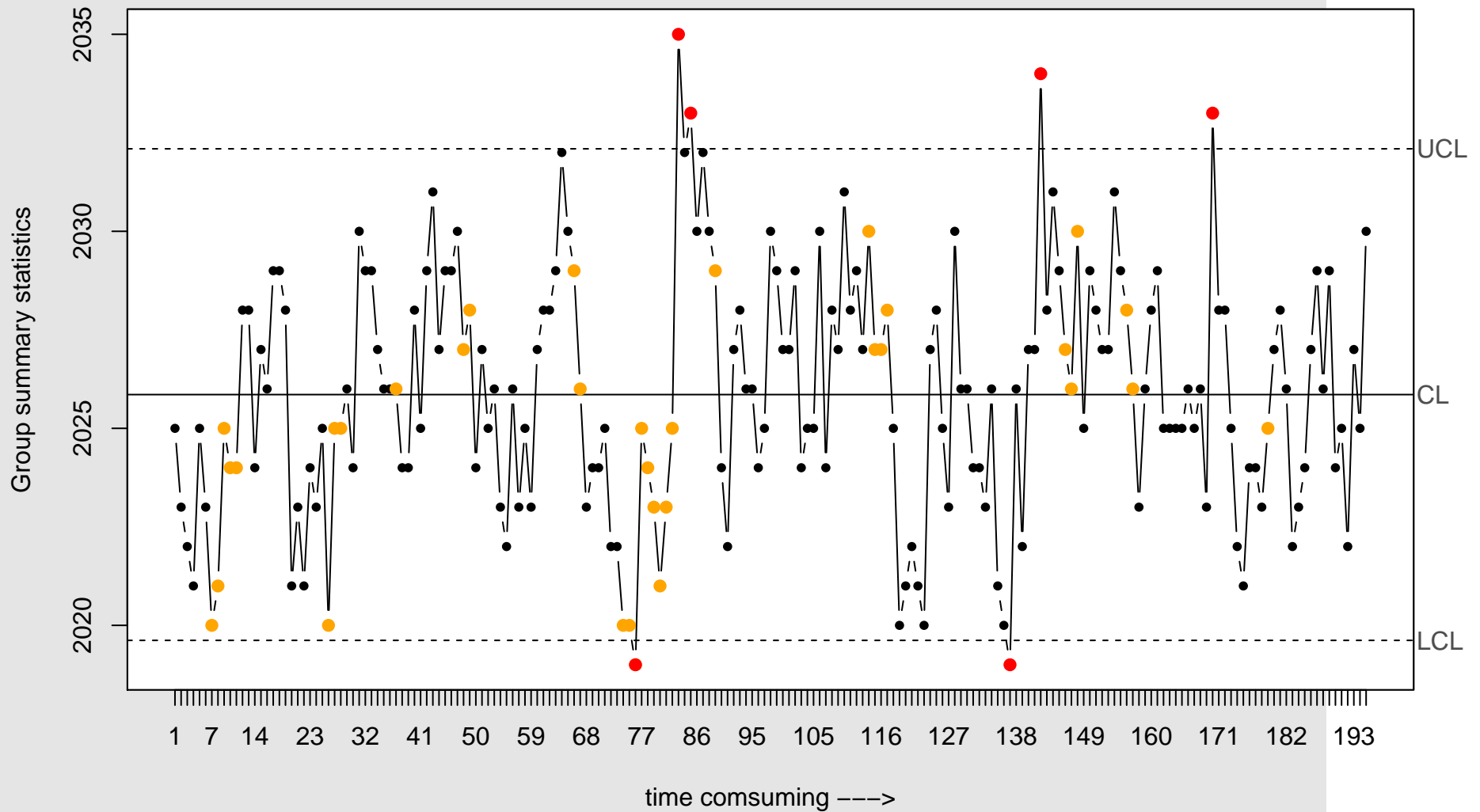
LCL = 2019.821

UCL = 2032.241

Number beyond limits = 8

Number violating runs = 38

# 176th column point of this product

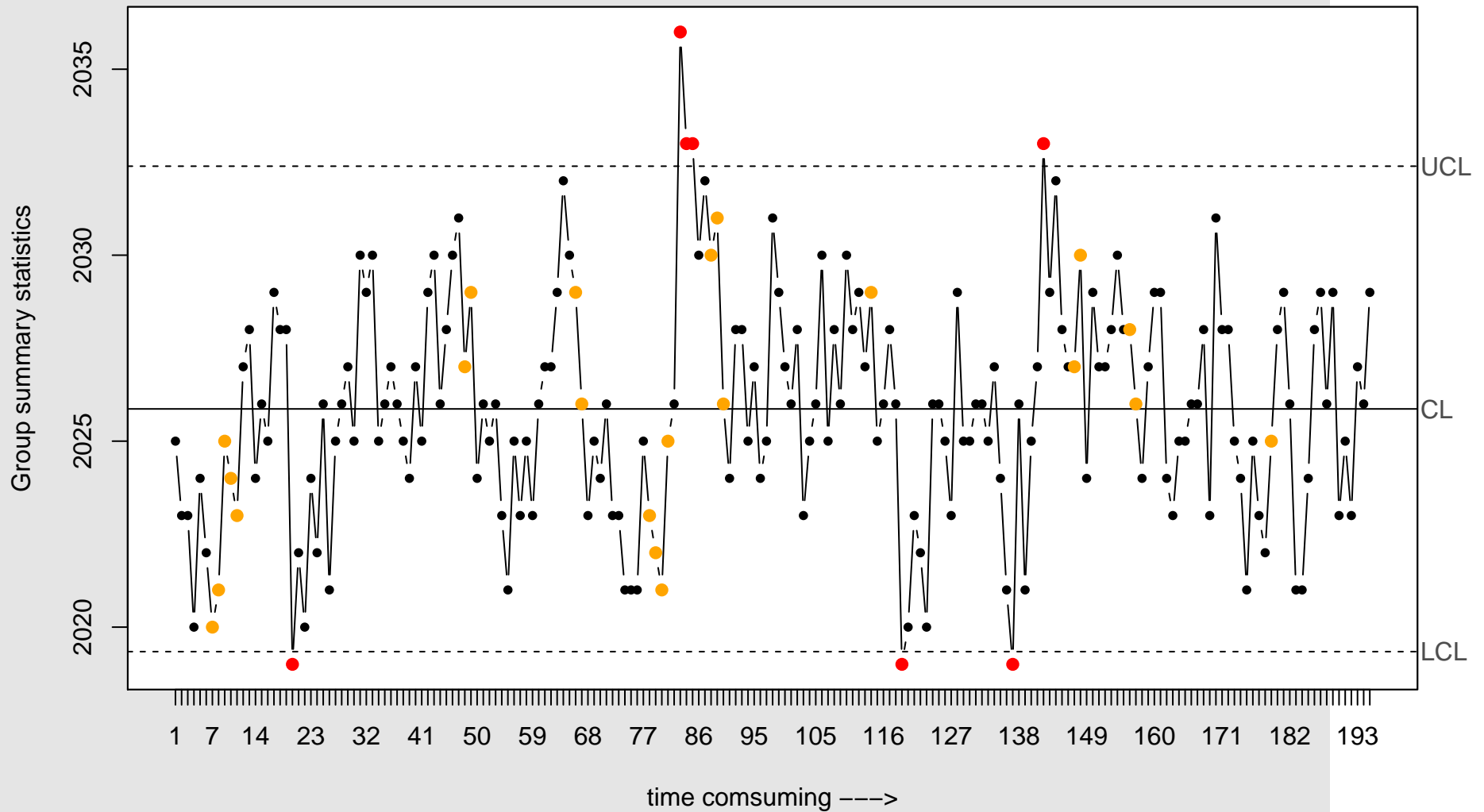


Number of groups = 195  
Center = 2025.856  
StdDev = 2.079221

LCL = 2019.619  
UCL = 2032.094

Number beyond limits = 6  
Number violating runs = 33

# 177th column point of this product



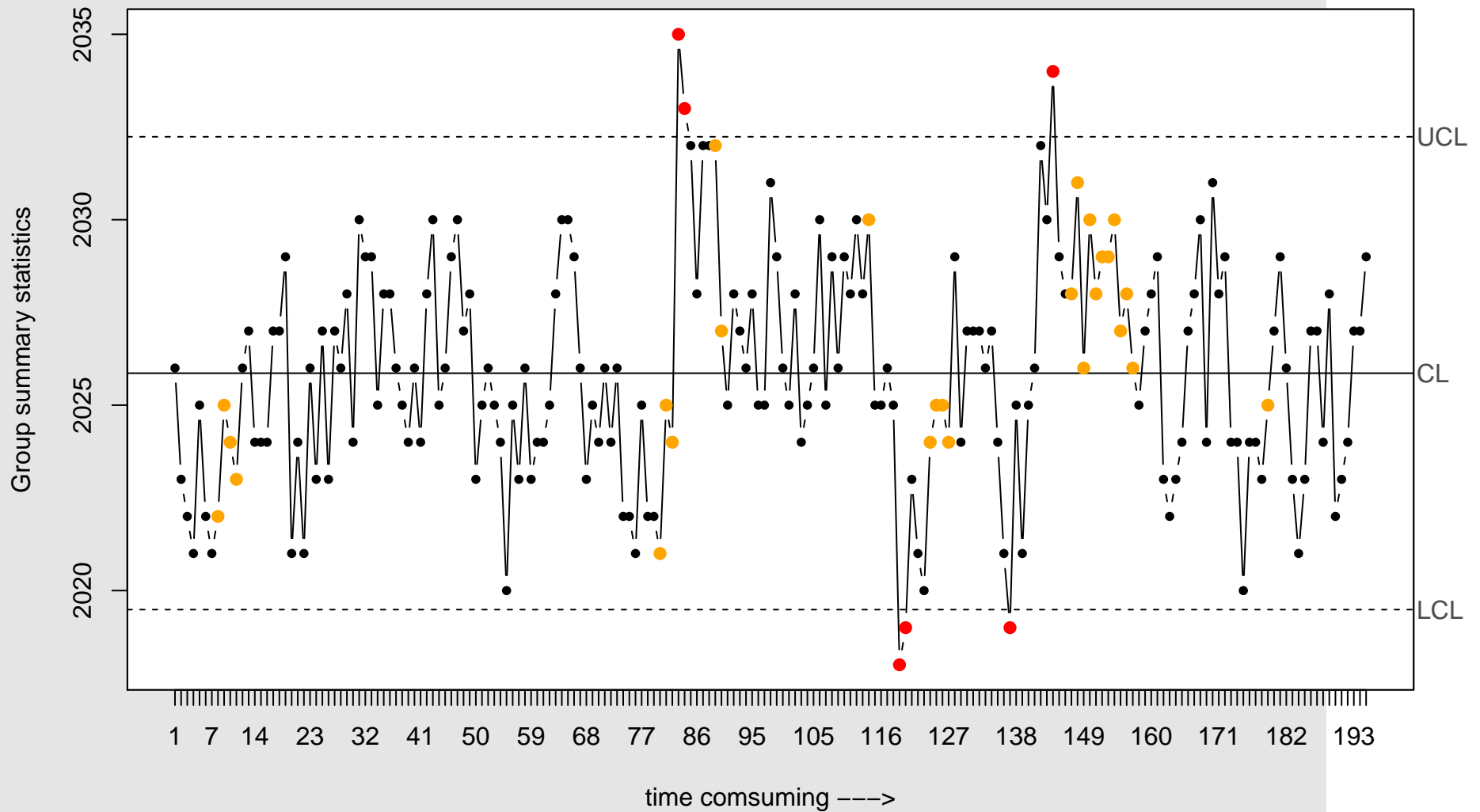
Number of groups = 195  
Center = 2025.867  
StdDev = 2.175185

LCL = 2019.341  
UCL = 2032.392

Number beyond limits = 7  
Number violating runs = 22



# 178th column point of this product

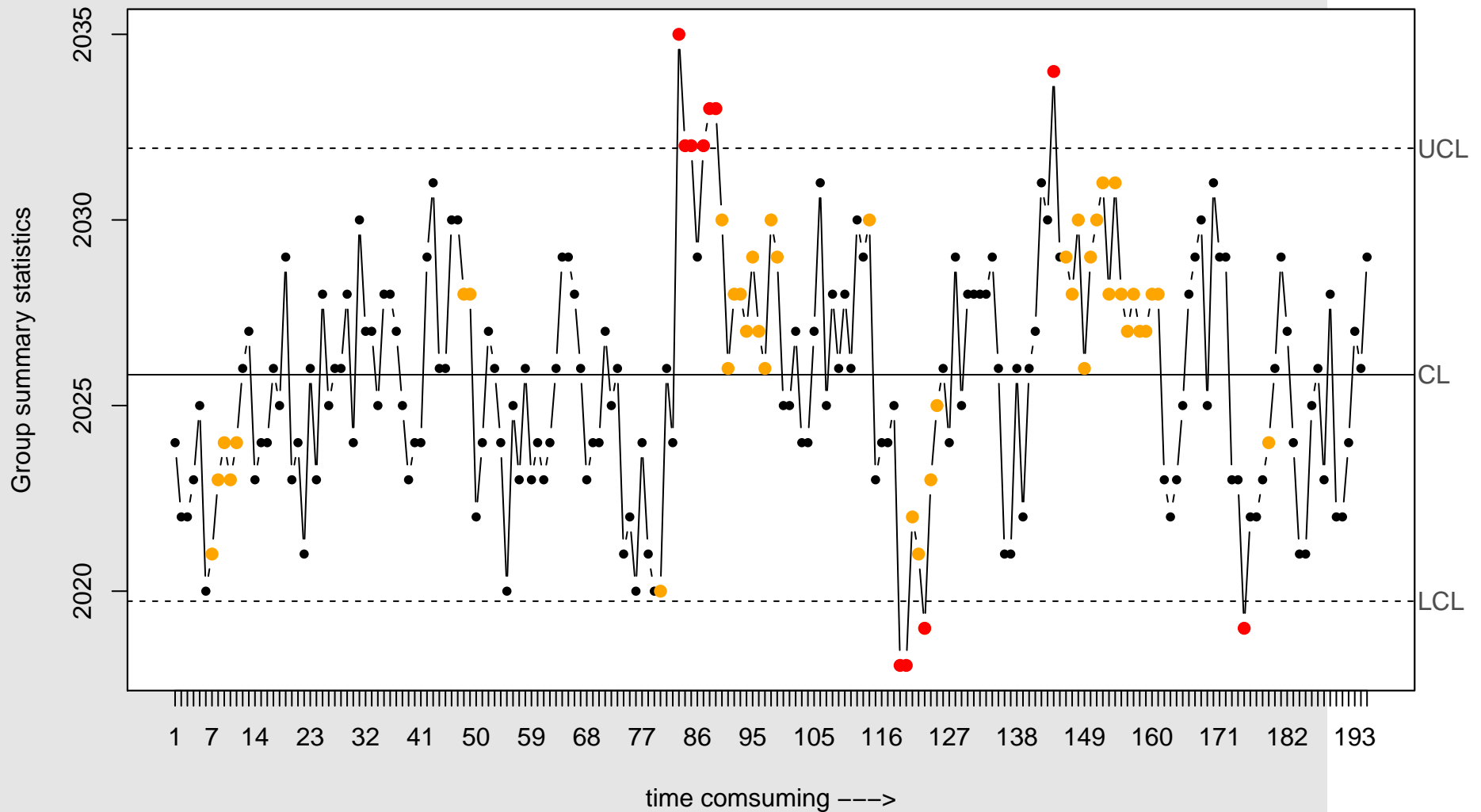


Number of groups = 195  
 Center = 2025.862  
 StdDev = 2.124918

LCL = 2019.487  
 UCL = 2032.236

Number beyond limits = 6  
 Number violating runs = 26

# 179th column point of this product



Number of groups = 195

Center = 2025.831

StdDev = 2.033523

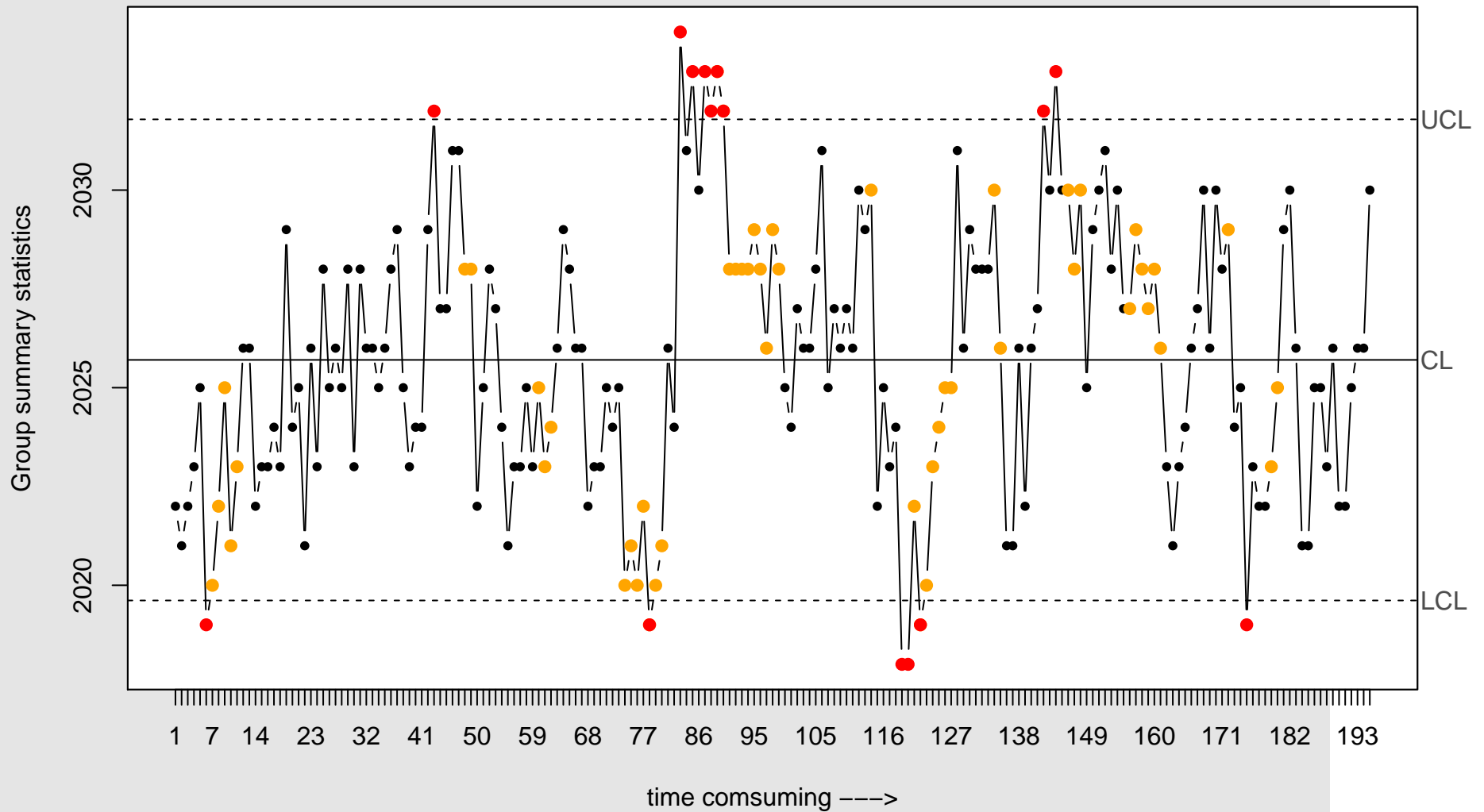
LCL = 2019.73

UCL = 2031.931

Number beyond limits = 11

Number violating runs = 42

# 180th column point of this product



Number of groups = 195

Center = 2025.703

StdDev = 2.028954

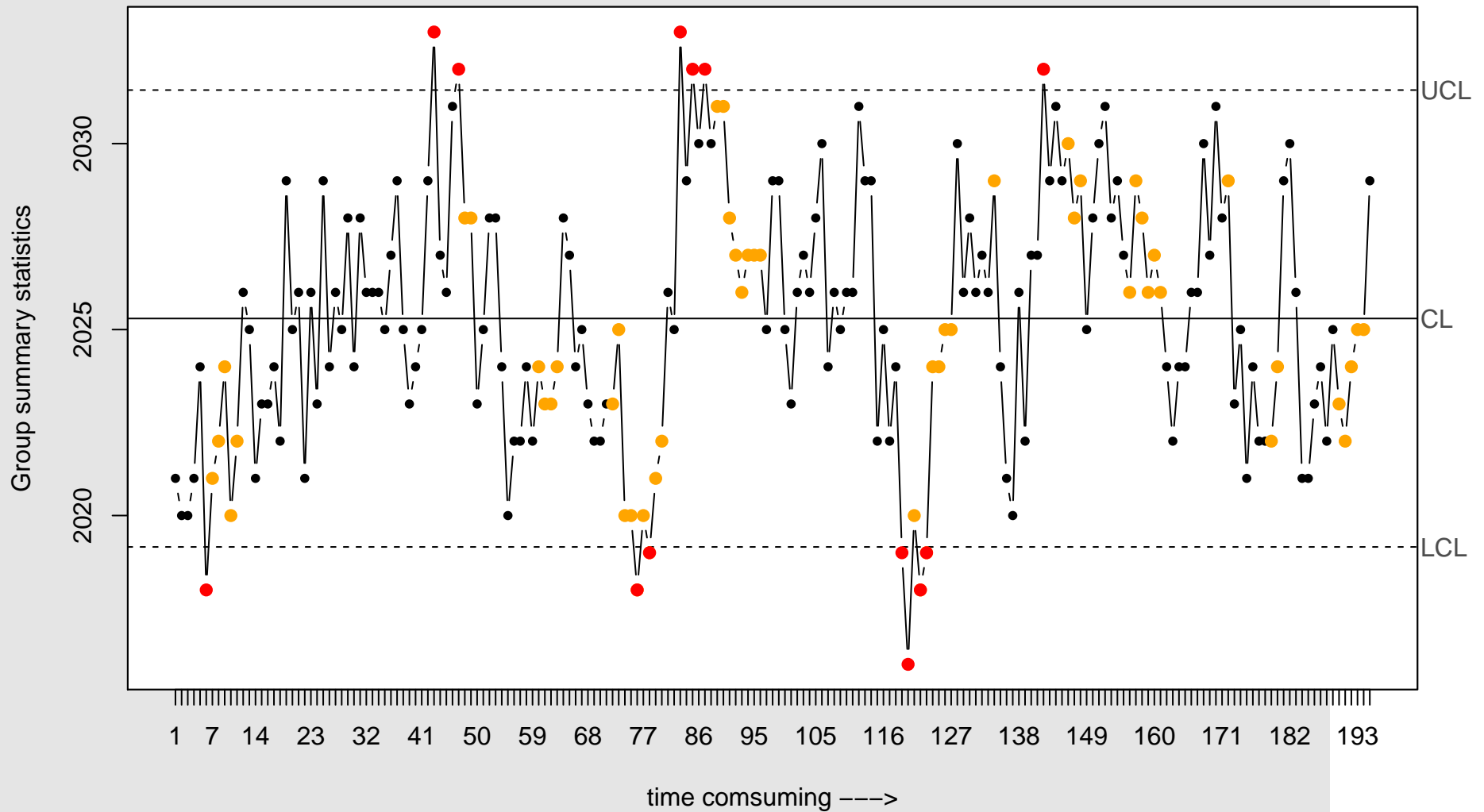
LCL = 2019.616

UCL = 2031.789

Number beyond limits = 15

Number violating runs = 50

# 181th column point of this product

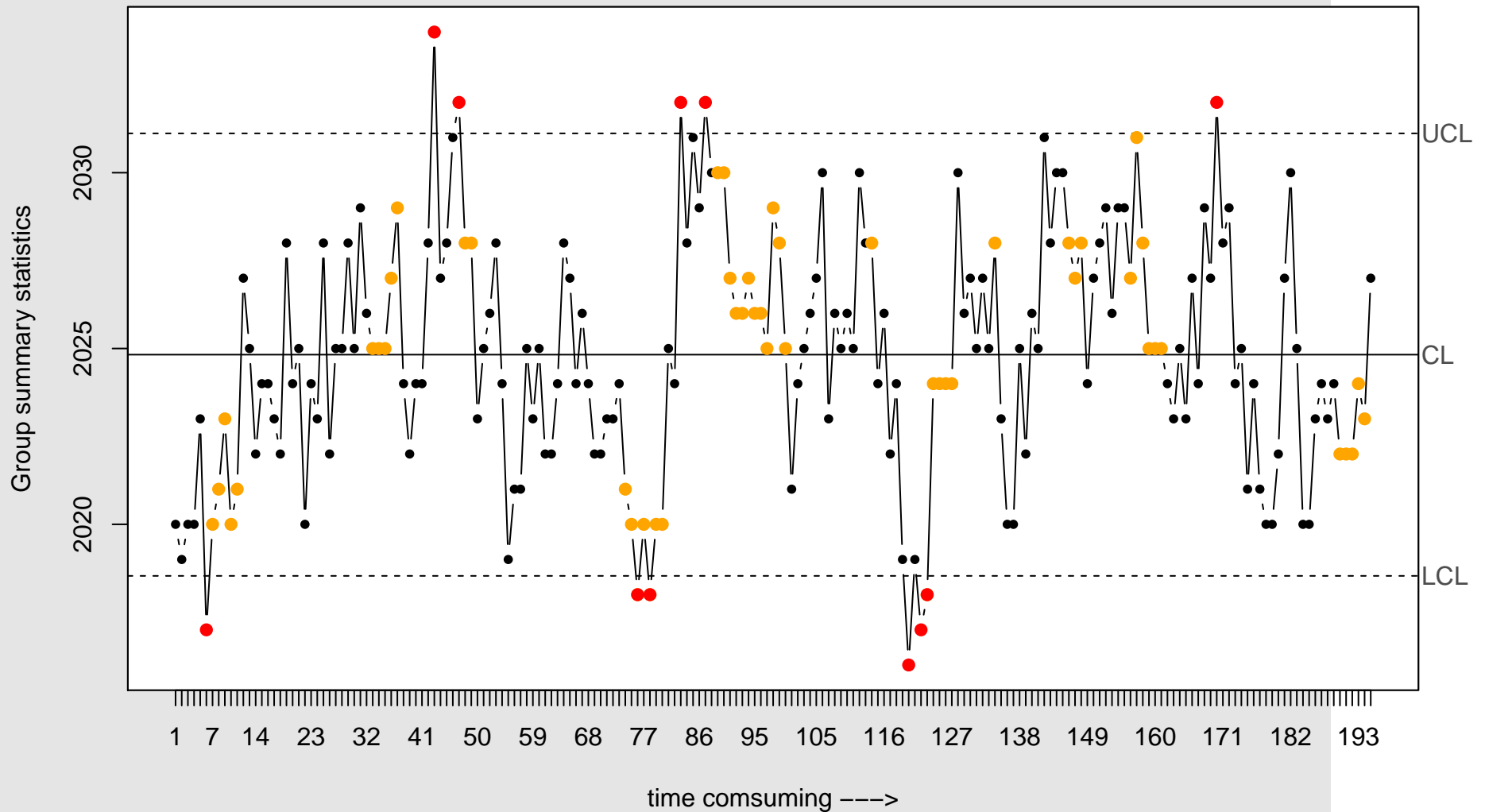


Number of groups = 195  
Center = 2025.297  
StdDev = 2.047233

LCL = 2019.156  
UCL = 2031.439

Number beyond limits = 13  
Number violating runs = 53

# 182th column point of this product



Number of groups = 195

Center = 2024.826

StdDev = 2.097499

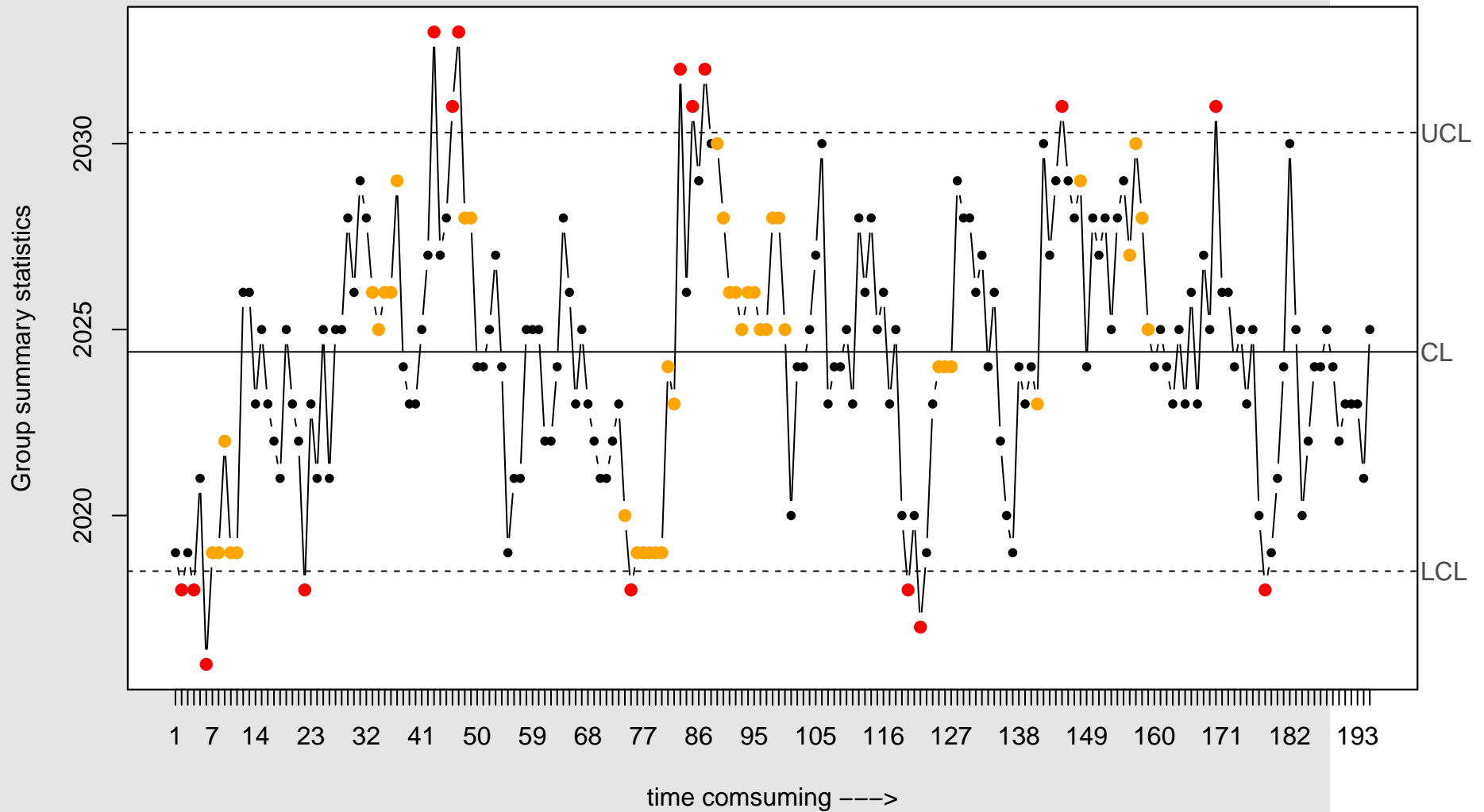
LCL = 2018.533

UCL = 2031.118

Number beyond limits = 11

Number violating runs = 52

# 183th column point of this product



Number of groups = 195

Center = 2024.4

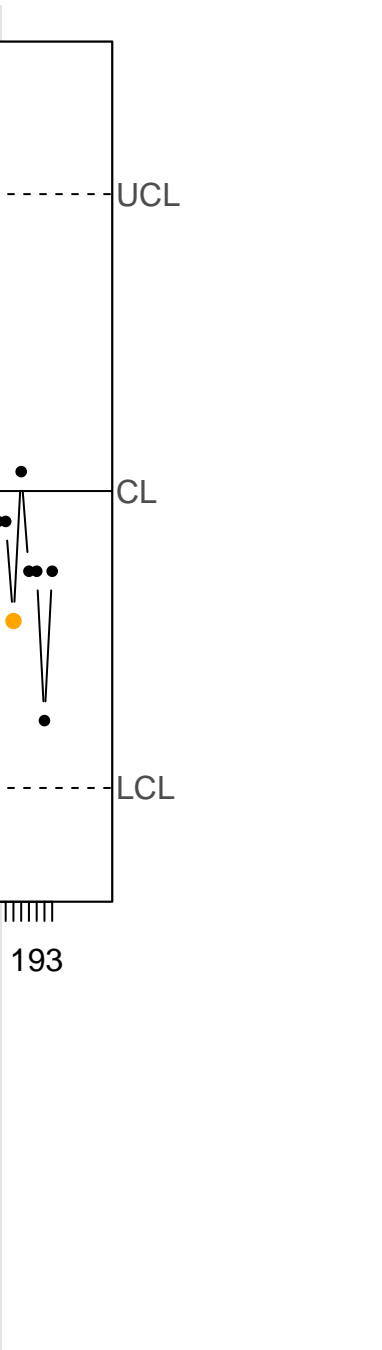
StdDev = 1.964978

LCL = 2018.505

UCL = 2030.295

Number beyond limits = 16

Number violating runs = 43

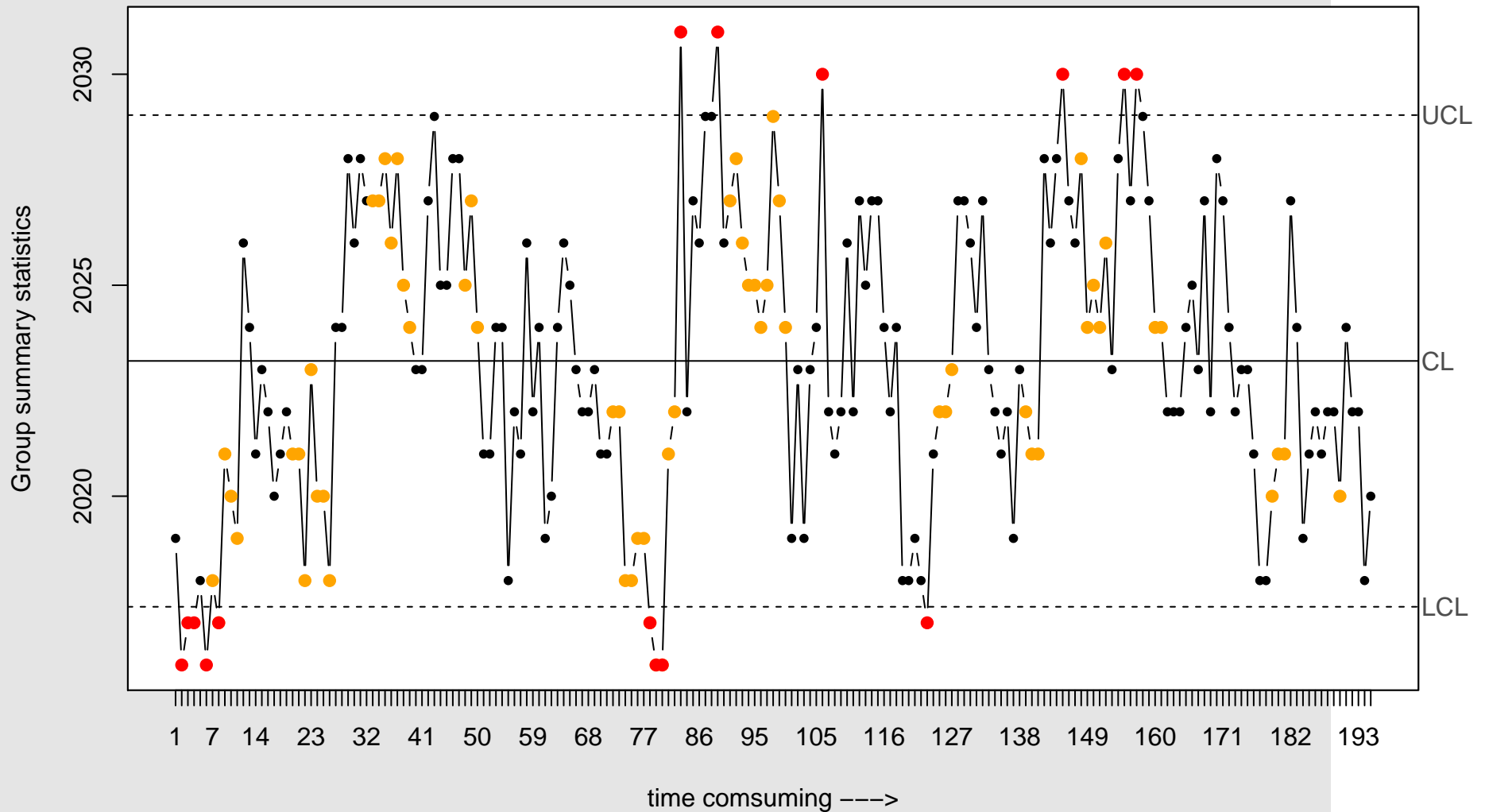


Number of groups = 195  
Center = 2023.61  
StdDev = 1.987826

LCL = 2017.647  
UCL = 2029.574

Number beyond limits = 18  
Number violating runs = 58

# 185th column point of this product



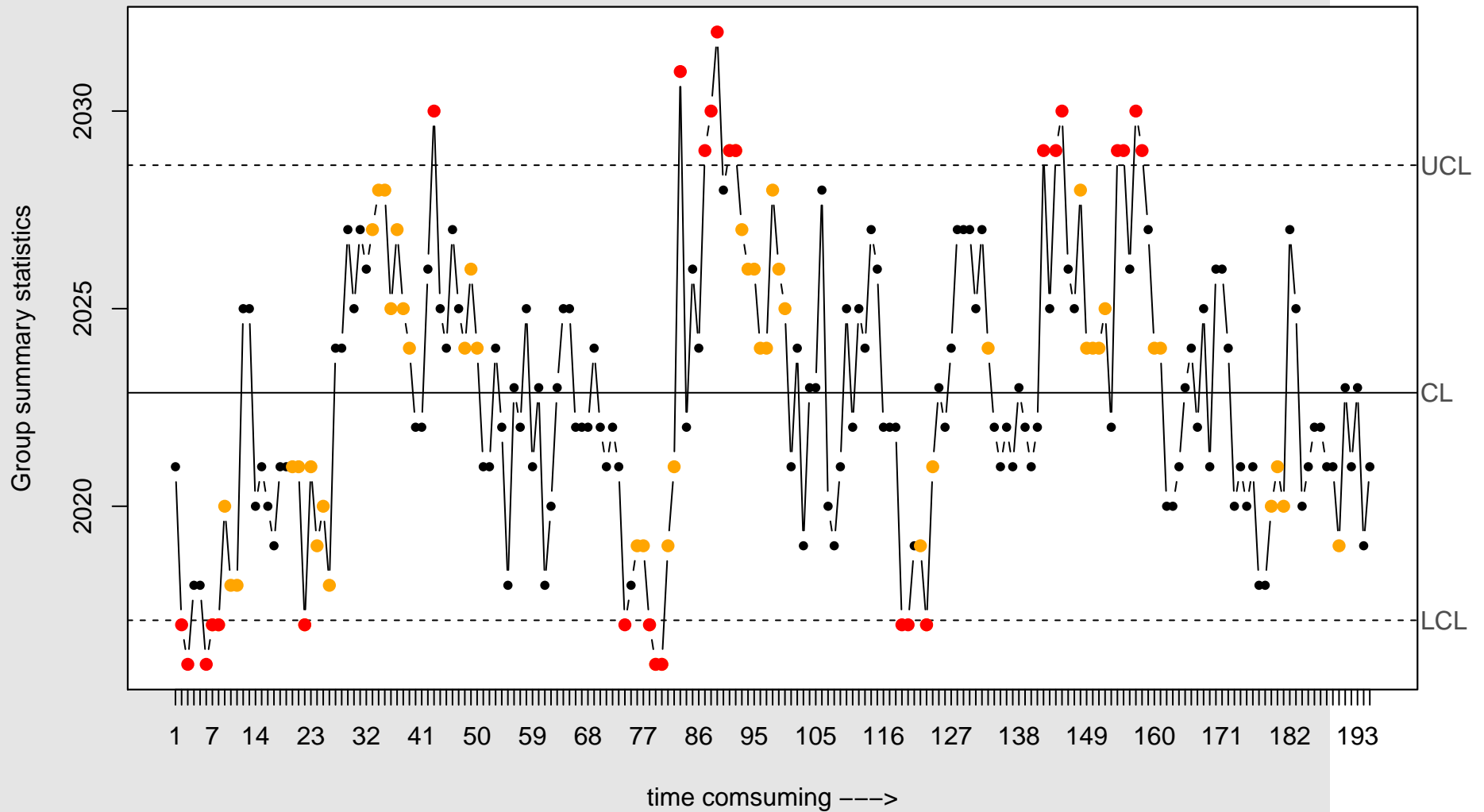
Number of groups = 195  
Center = 2023.205  
StdDev = 1.942129

LCL = 2017.379  
UCL = 2029.032

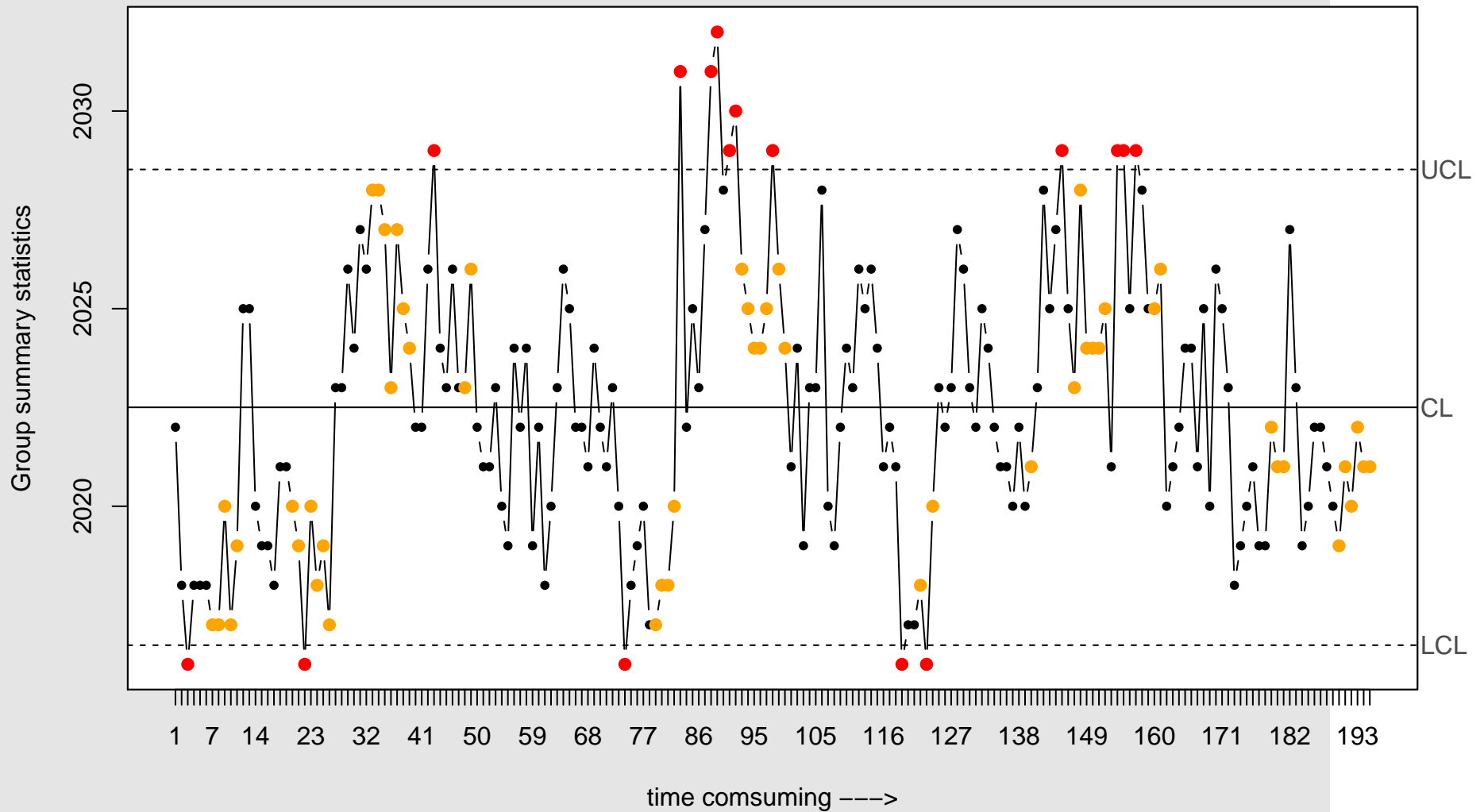
Number beyond limits = 15  
Number violating runs = 60



# 186th column point of this product



# 187th column point of this product



Number of groups = 195

Center = 2022.503

StdDev = 2.006105

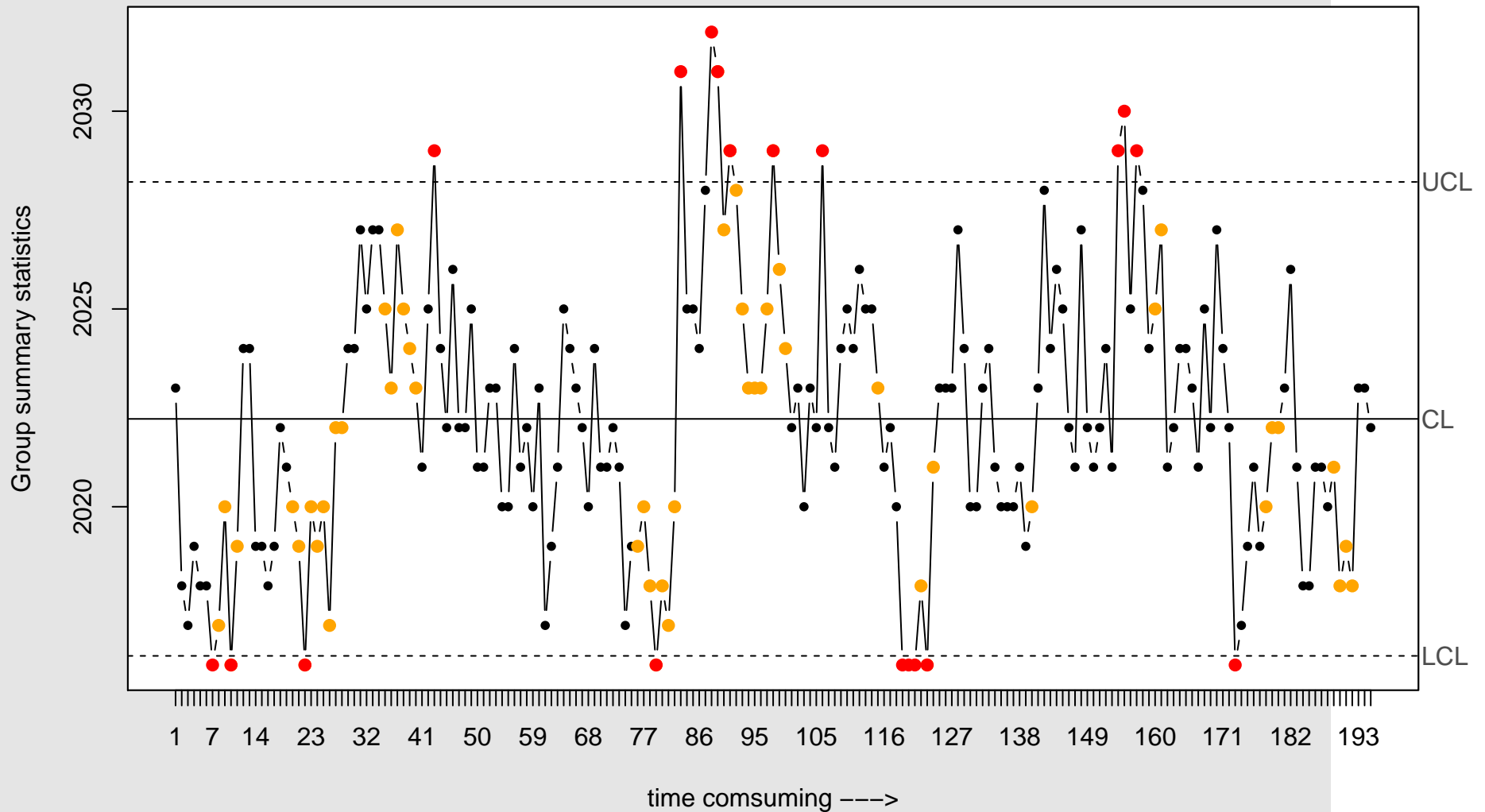
LCL = 2016.484

UCL = 2028.521

Number beyond limits = 16

Number violating runs = 56

# 188th column point of this product



Number of groups = 195

Center = 2022.221

StdDev = 1.996966

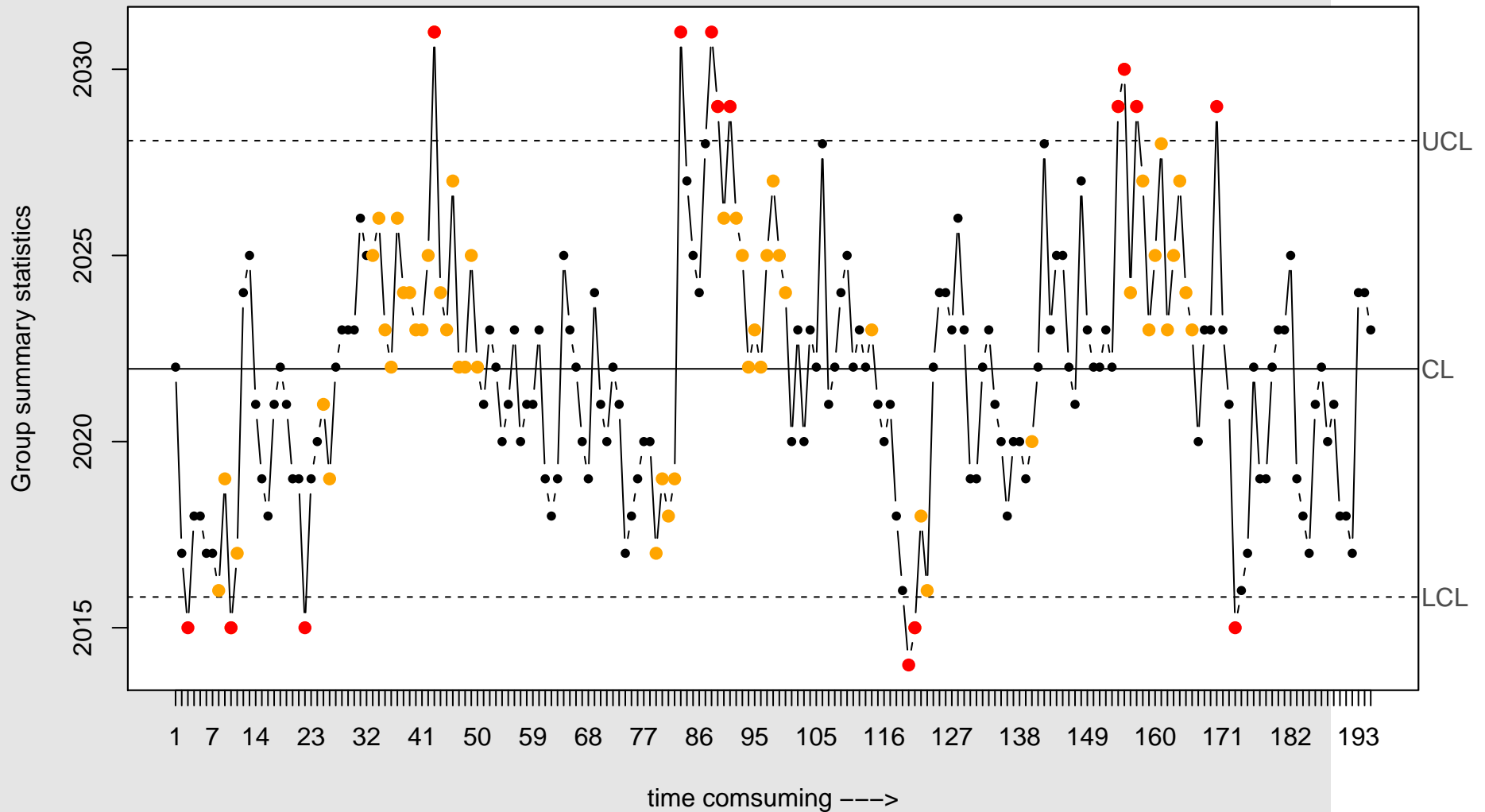
LCL = 2016.23

UCL = 2028.211

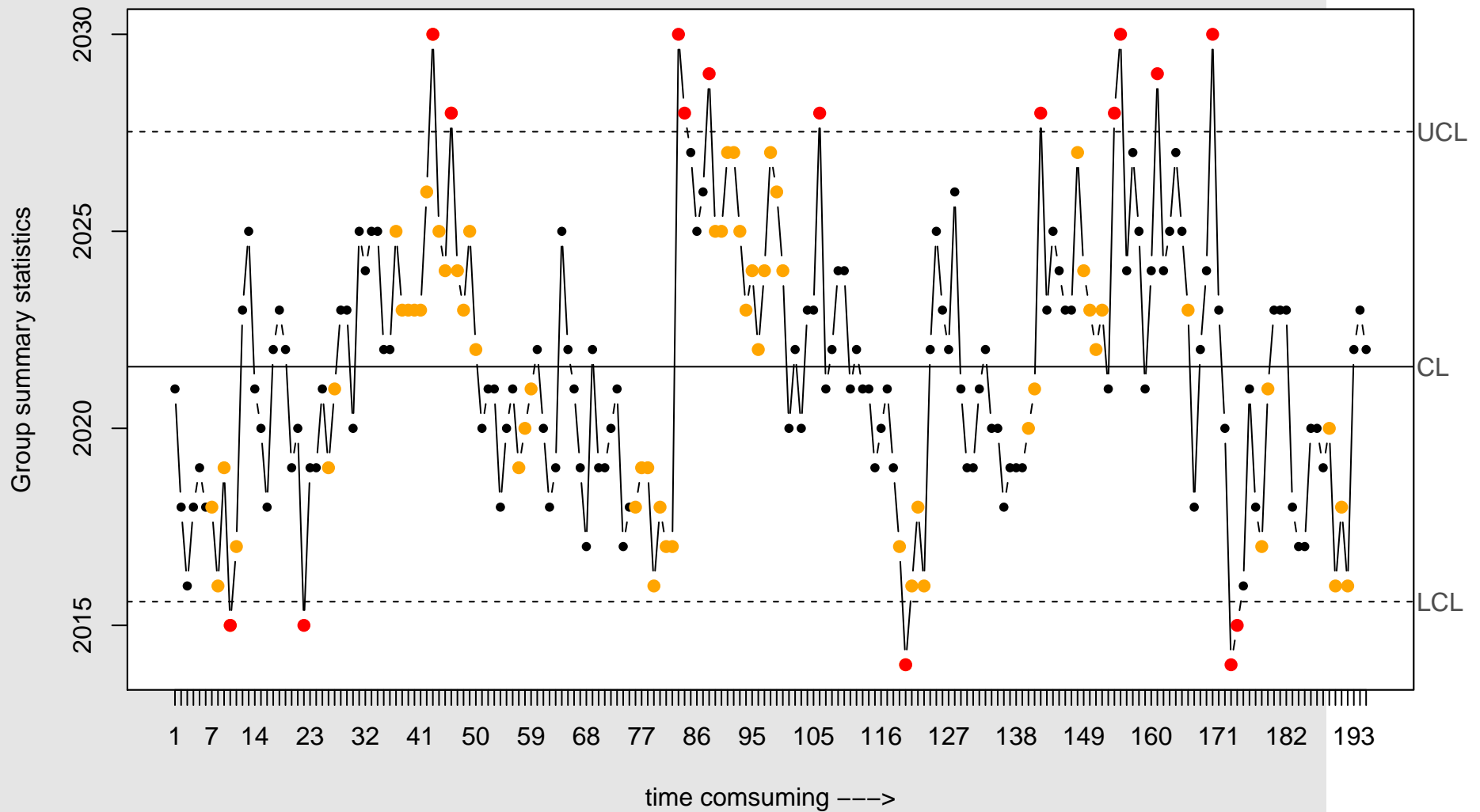
Number beyond limits = 19

Number violating runs = 52

# 189th column point of this product



# 190th column point of this product

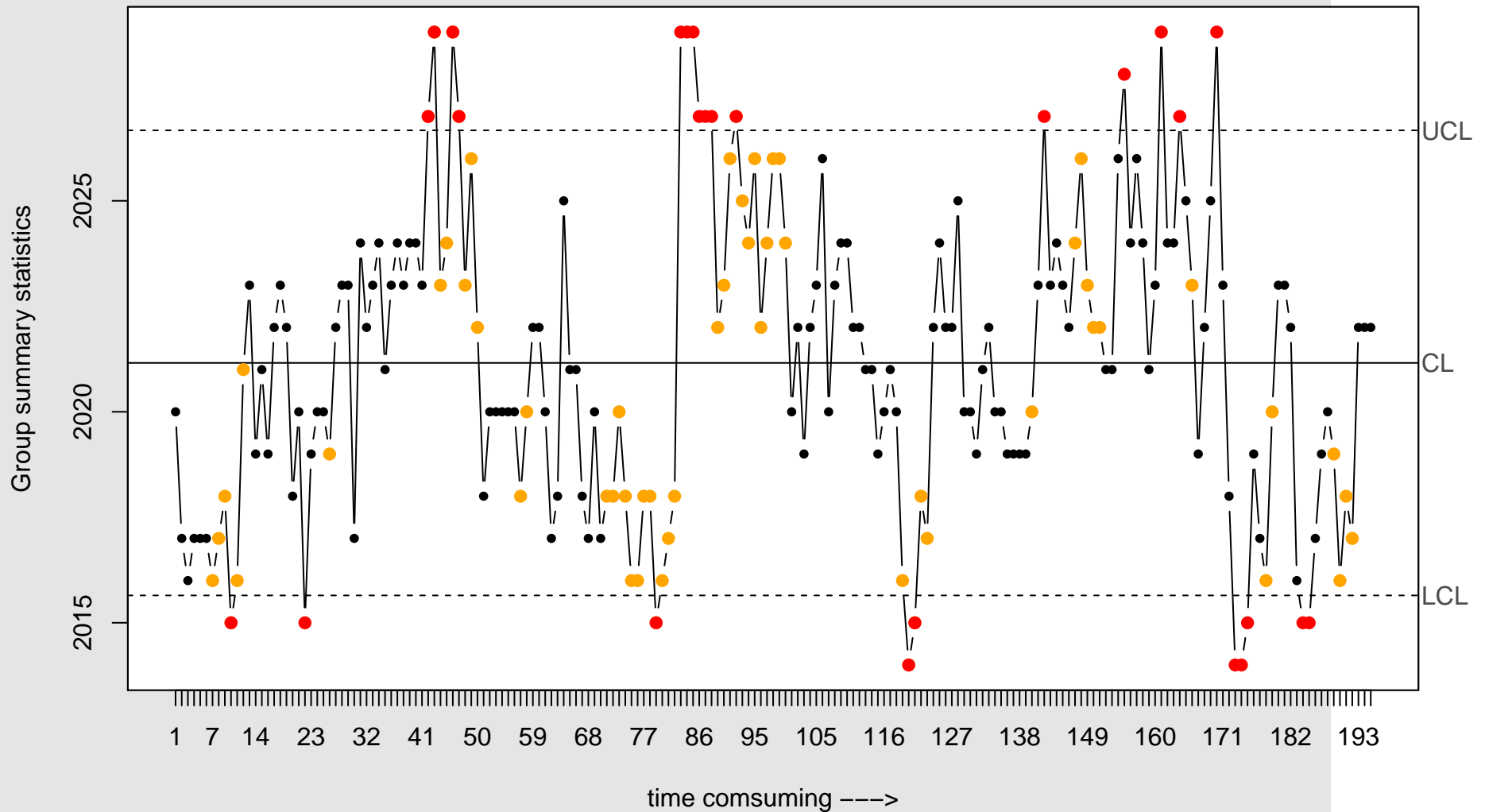


Number of groups = 195  
Center = 2021.564  
StdDev = 1.987826

LCL = 2015.601  
UCL = 2027.528

Number beyond limits = 16  
Number violating runs = 62

# 191th column point of this product



Number of groups = 195

Center = 2021.159

StdDev = 1.837026

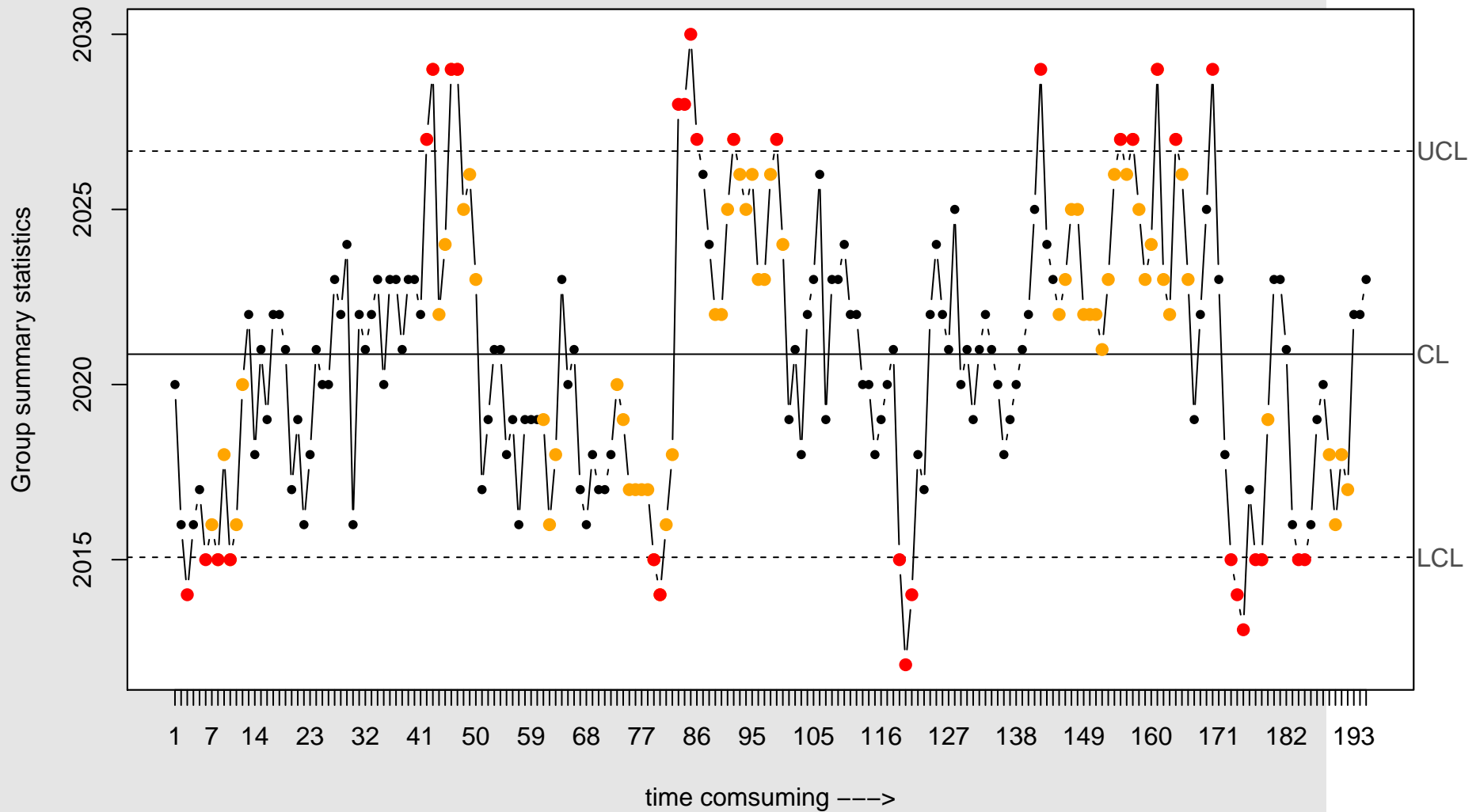
LCL = 2015.648

UCL = 2026.67

Number beyond limits = 26

Number violating runs = 60

# 192th column point of this product

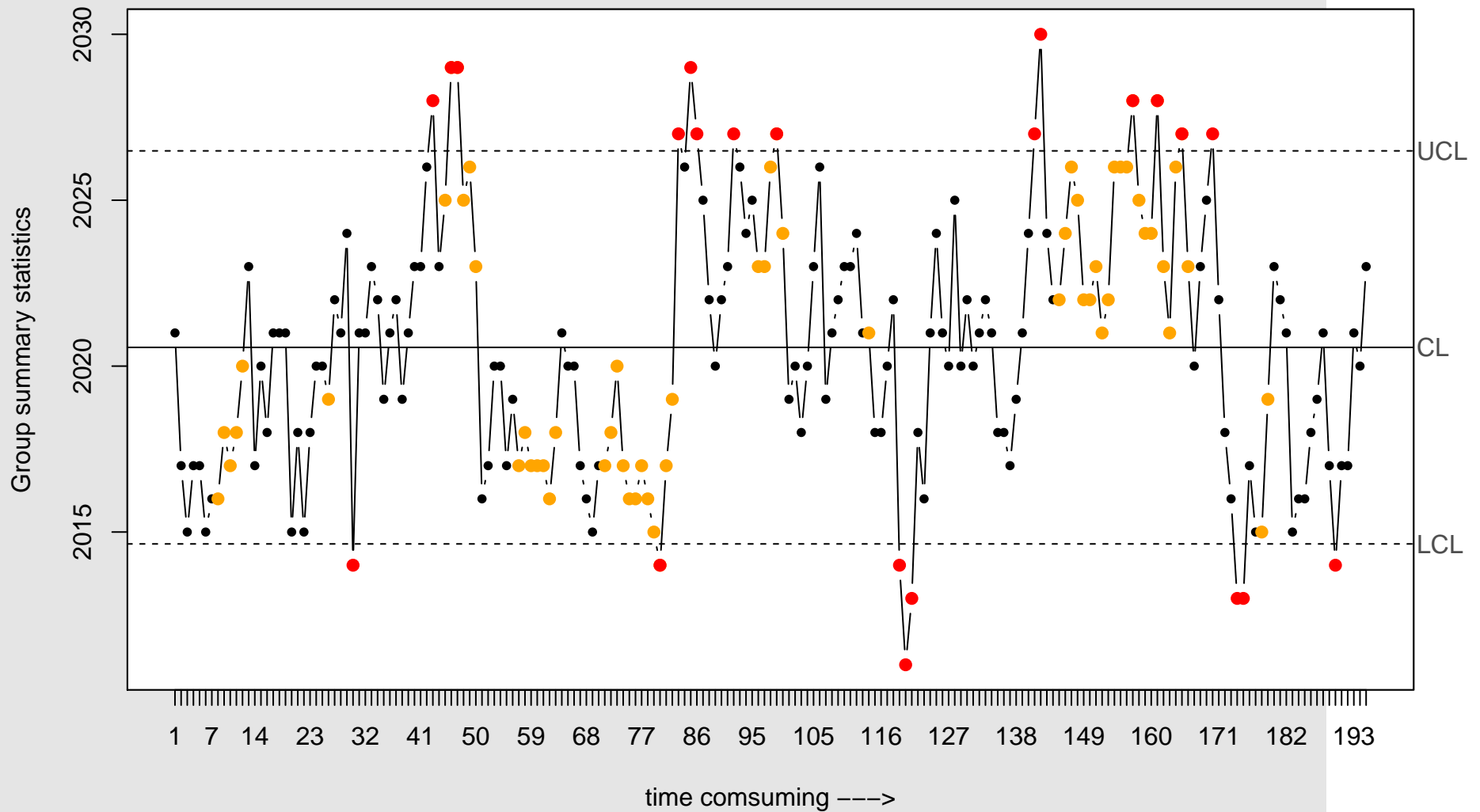


Number of groups = 195  
Center = 2020.867  
StdDev = 1.93299

LCL = 2015.068  
UCL = 2026.666

Number beyond limits = 32  
Number violating runs = 68

# 193th column point of this product



Number of groups = 195

Center = 2020.564

StdDev = 1.974117

LCL = 2014.642

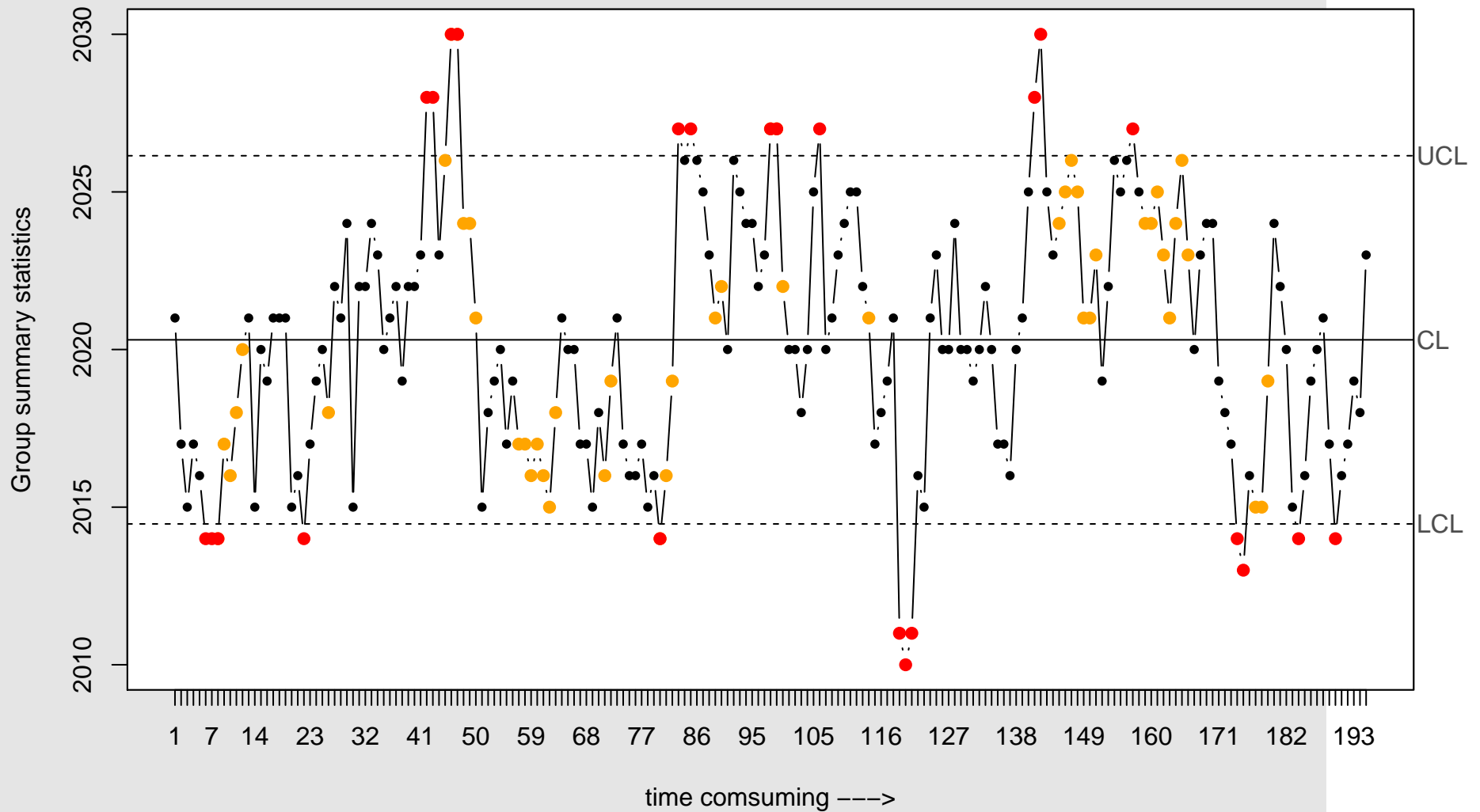
UCL = 2026.486

Number beyond limits = 22

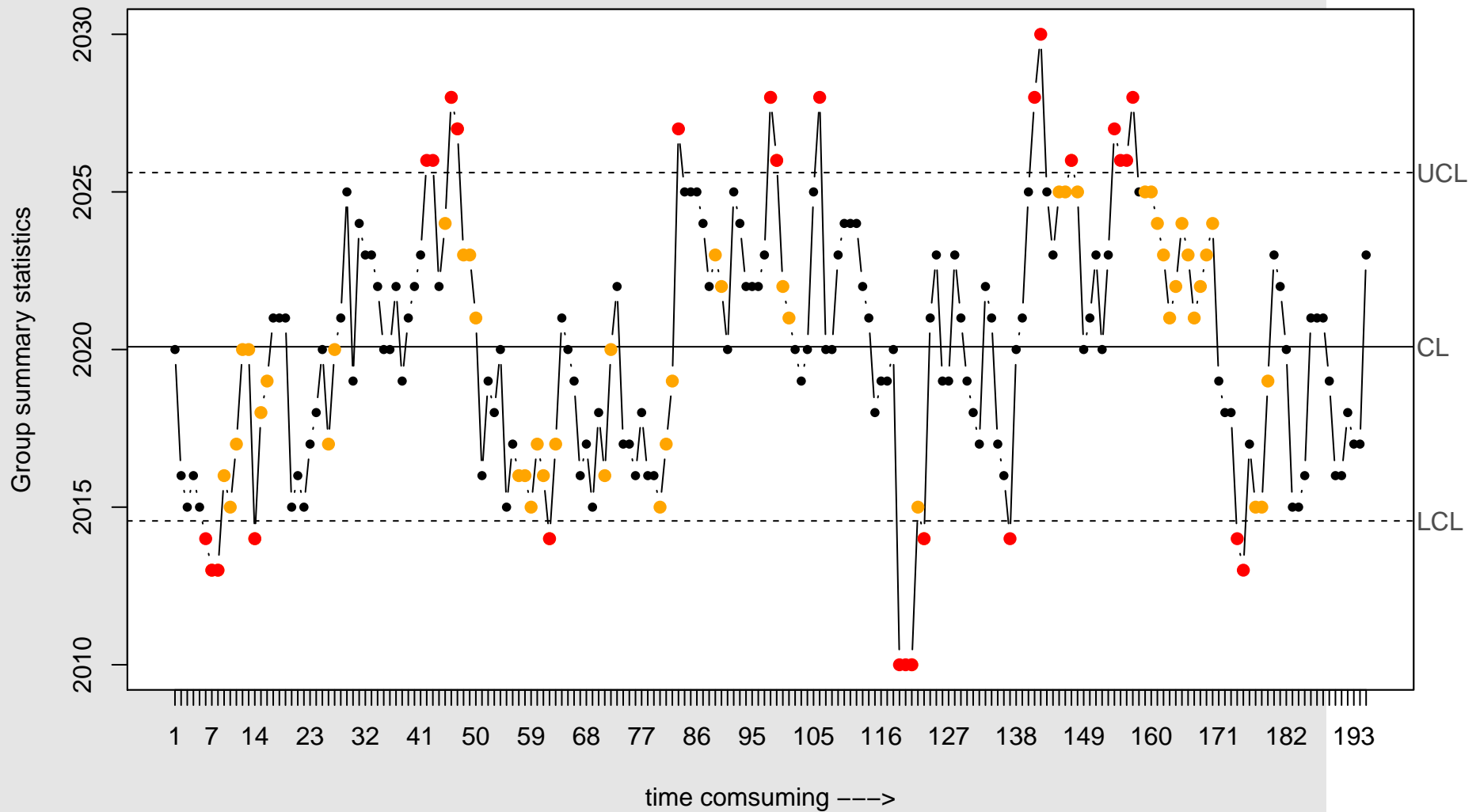
Number violating runs = 61



# 194th column point of this product



# 195th column point of this product



Number of groups = 195

Center = 2020.087

StdDev = 1.841595

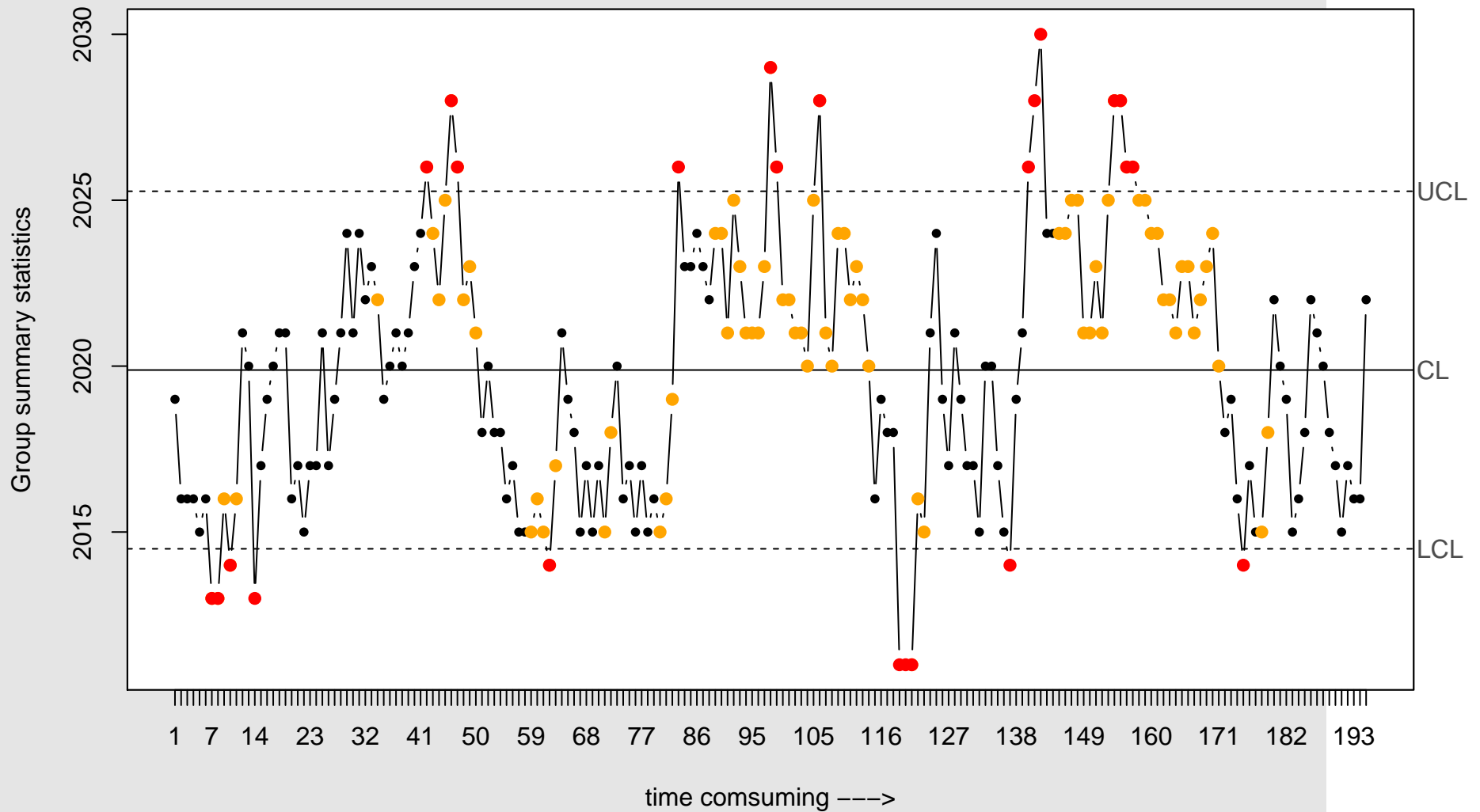
LCL = 2014.562

UCL = 2025.612

Number beyond limits = 27

Number violating runs = 58

# 196th column point of this product

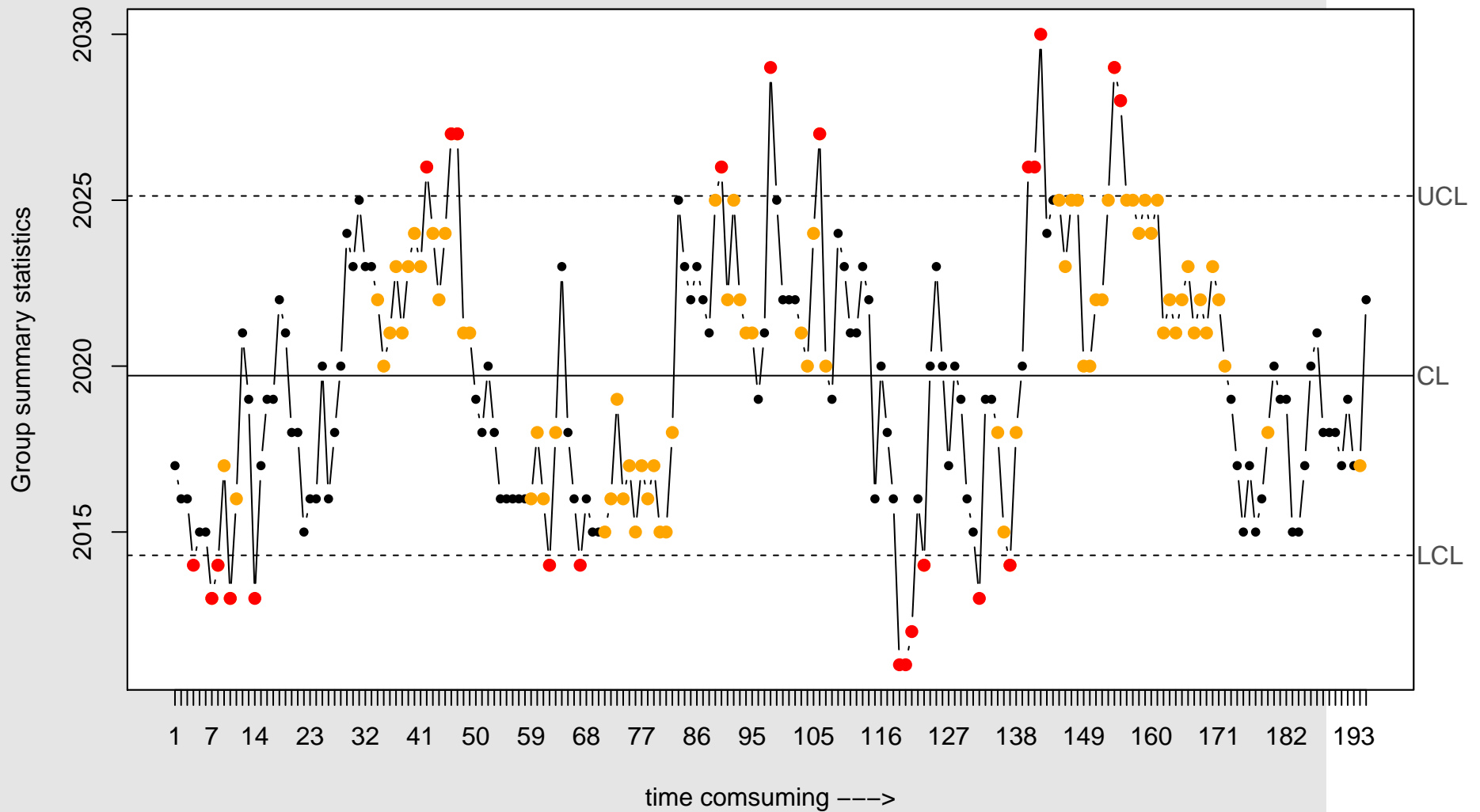


Number of groups = 195  
 Center = 2019.882  
 StdDev = 1.795898

LCL = 2014.494  
 UCL = 2025.27

Number beyond limits = 24  
 Number violating runs = 83

# 197th column point of this product



Number of groups = 195

Center = 2019.713

StdDev = 1.805038

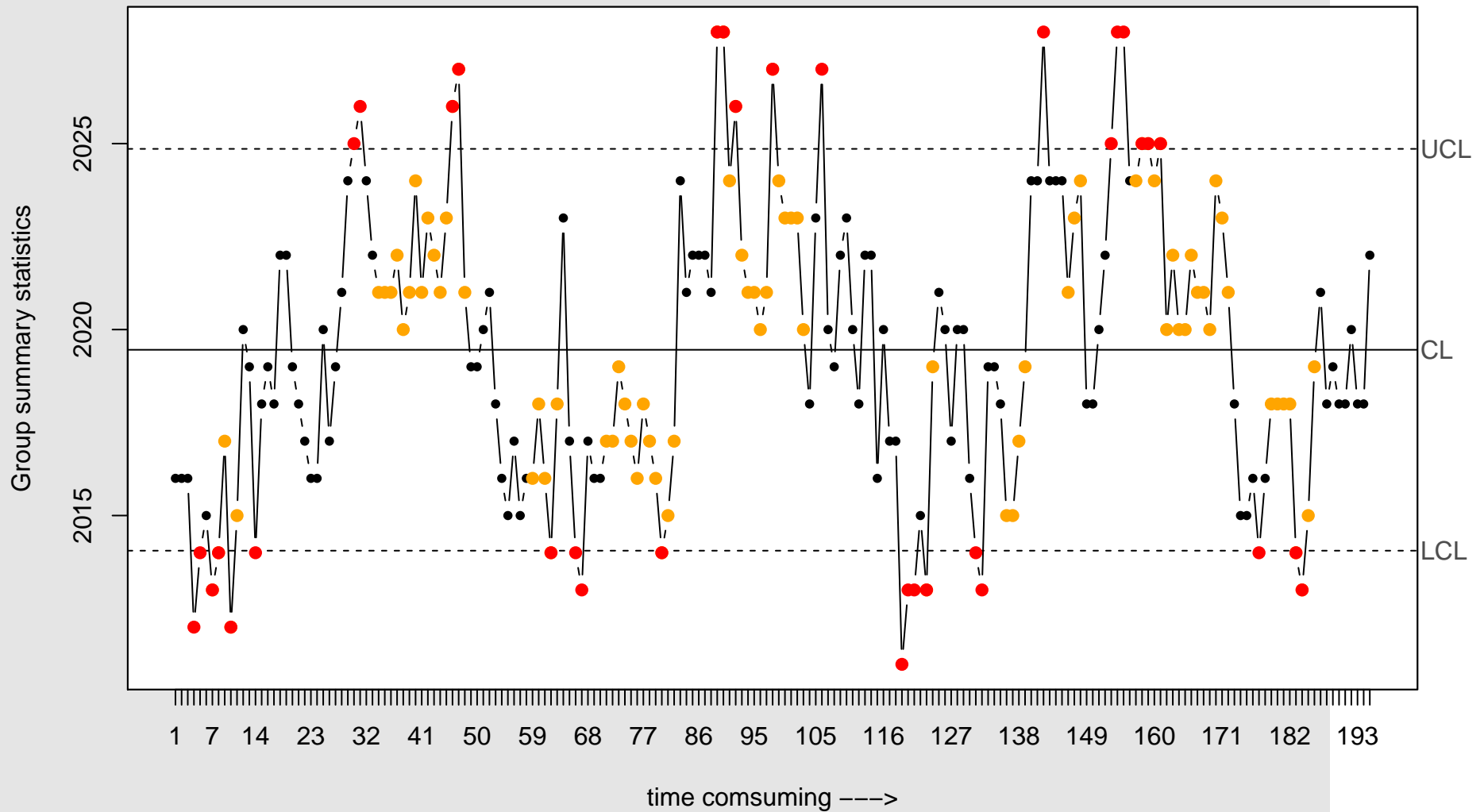
LCL = 2014.298

UCL = 2025.128

Number beyond limits = 24

Number violating runs = 85

# 198th column point of this product



Number of groups = 195

Center = 2019.456

StdDev = 1.800468

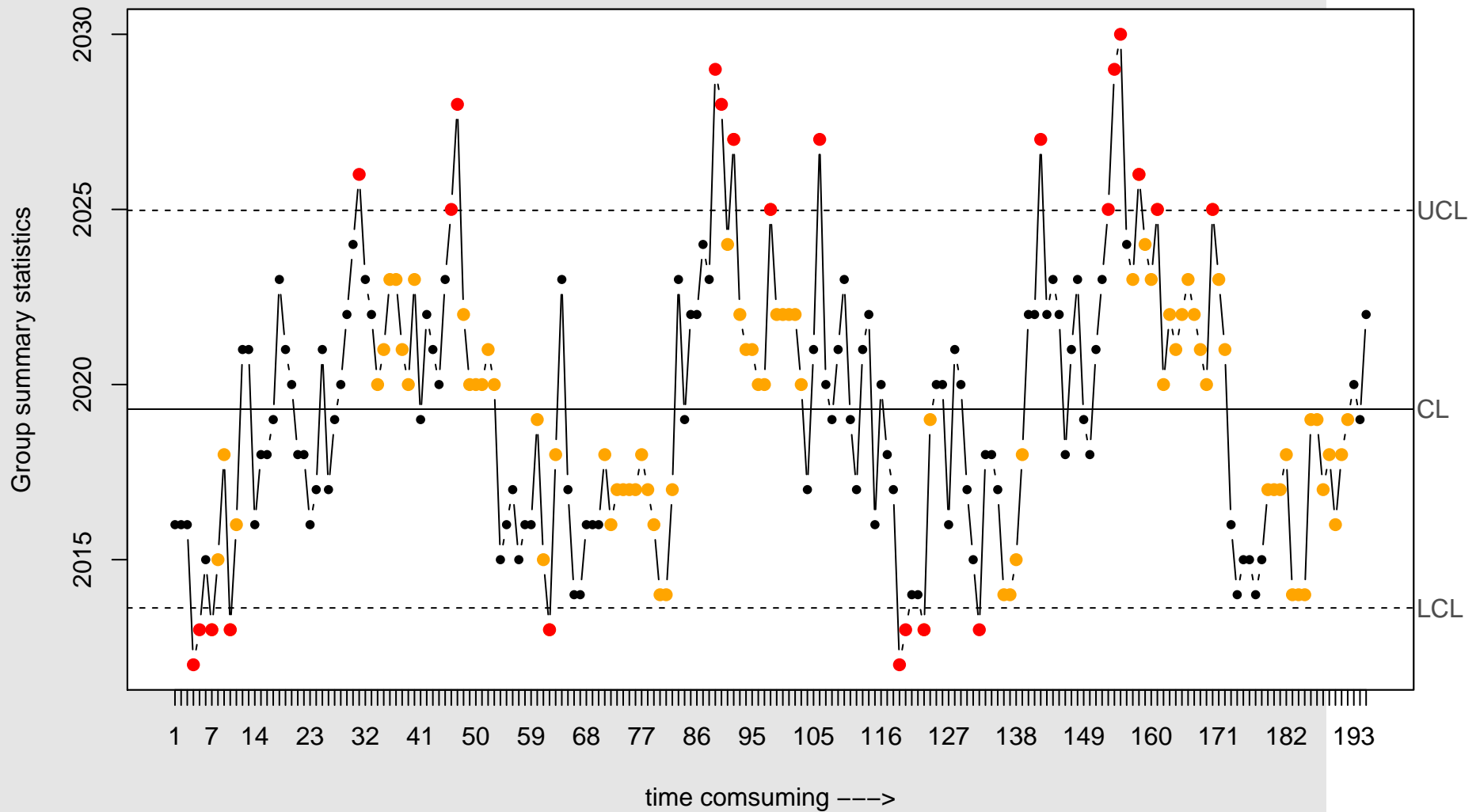
LCL = 2014.055

UCL = 2024.858

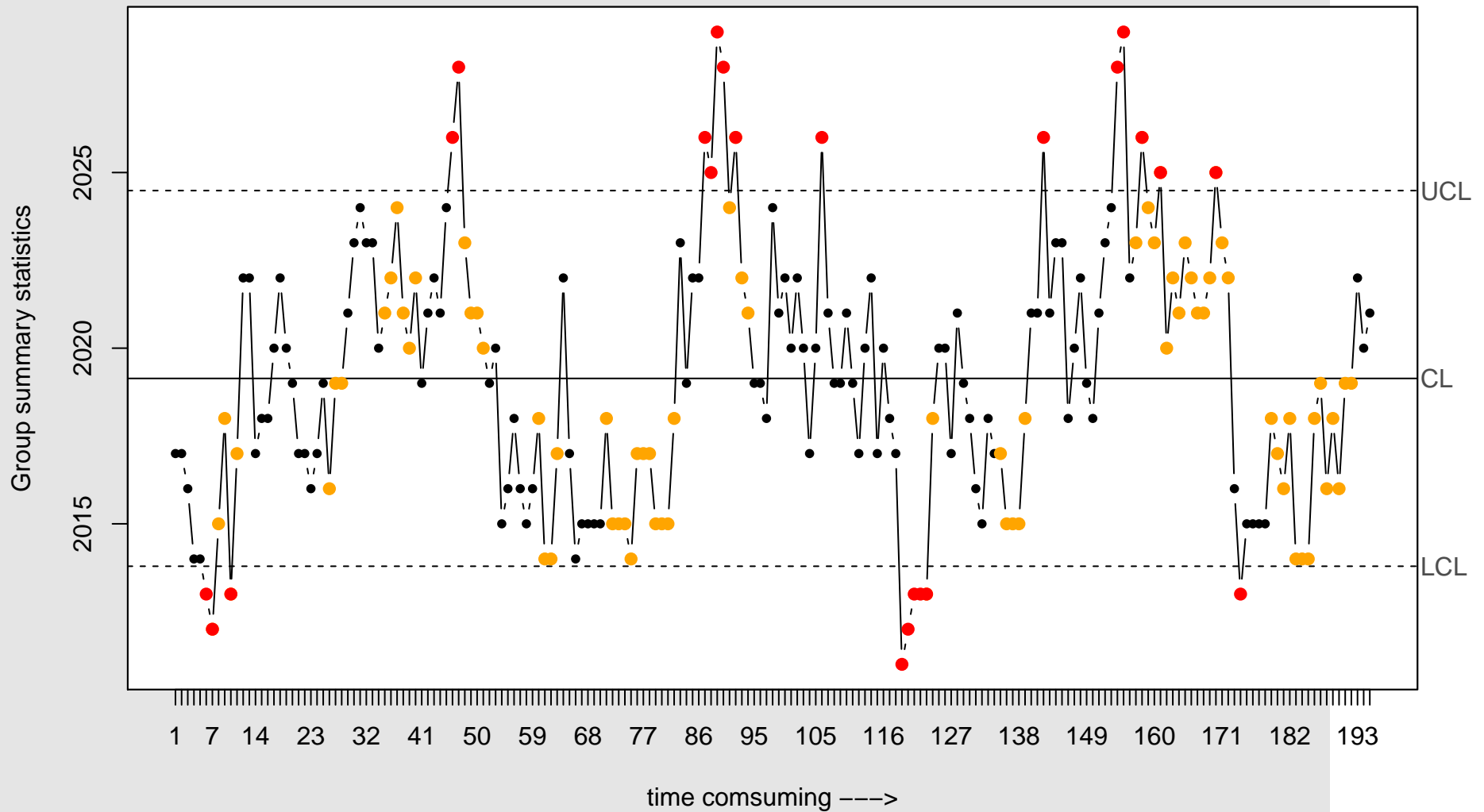
Number beyond limits = 35

Number violating runs = 85

# 199th column point of this product



## 200th column point of this product



Number of groups = 195

Center = 2019.138

StdDev = 1.782189

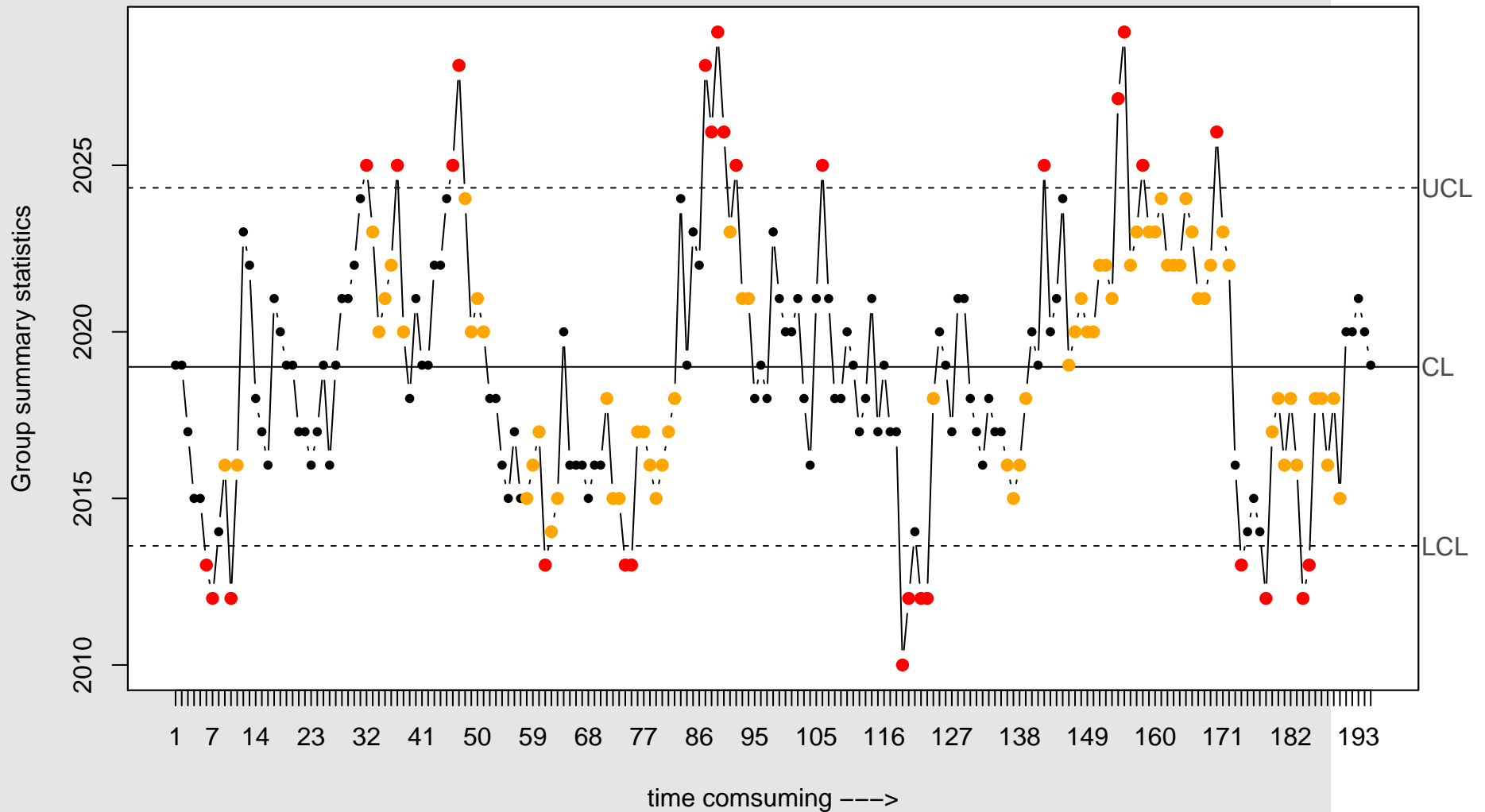
LCL = 2013.792

UCL = 2024.485

Number beyond limits = 23

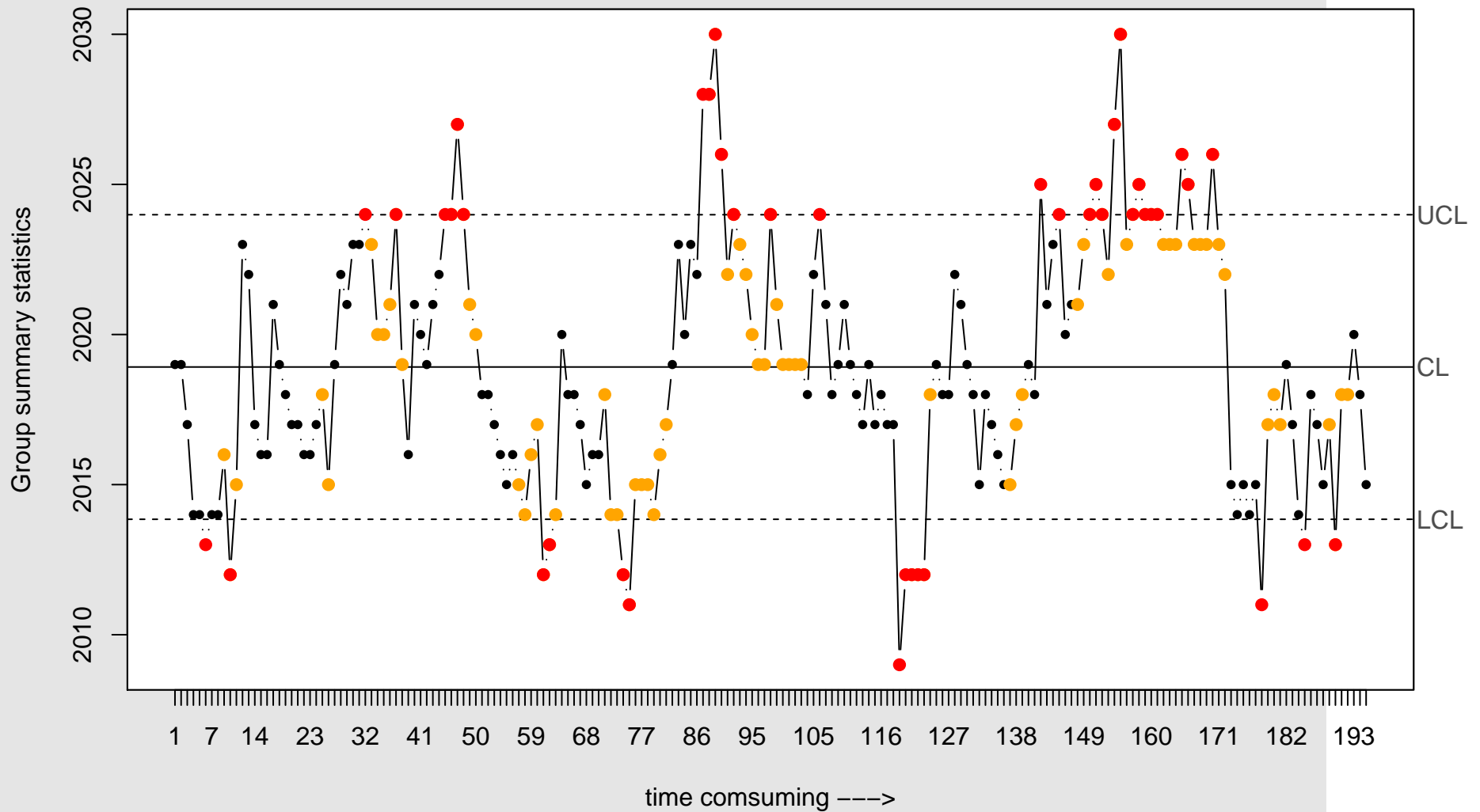
Number violating runs = 75

## 201th column point of this product





## 202th column point of this product



Number of groups = 195

Center = 2018.918

StdDev = 1.690795

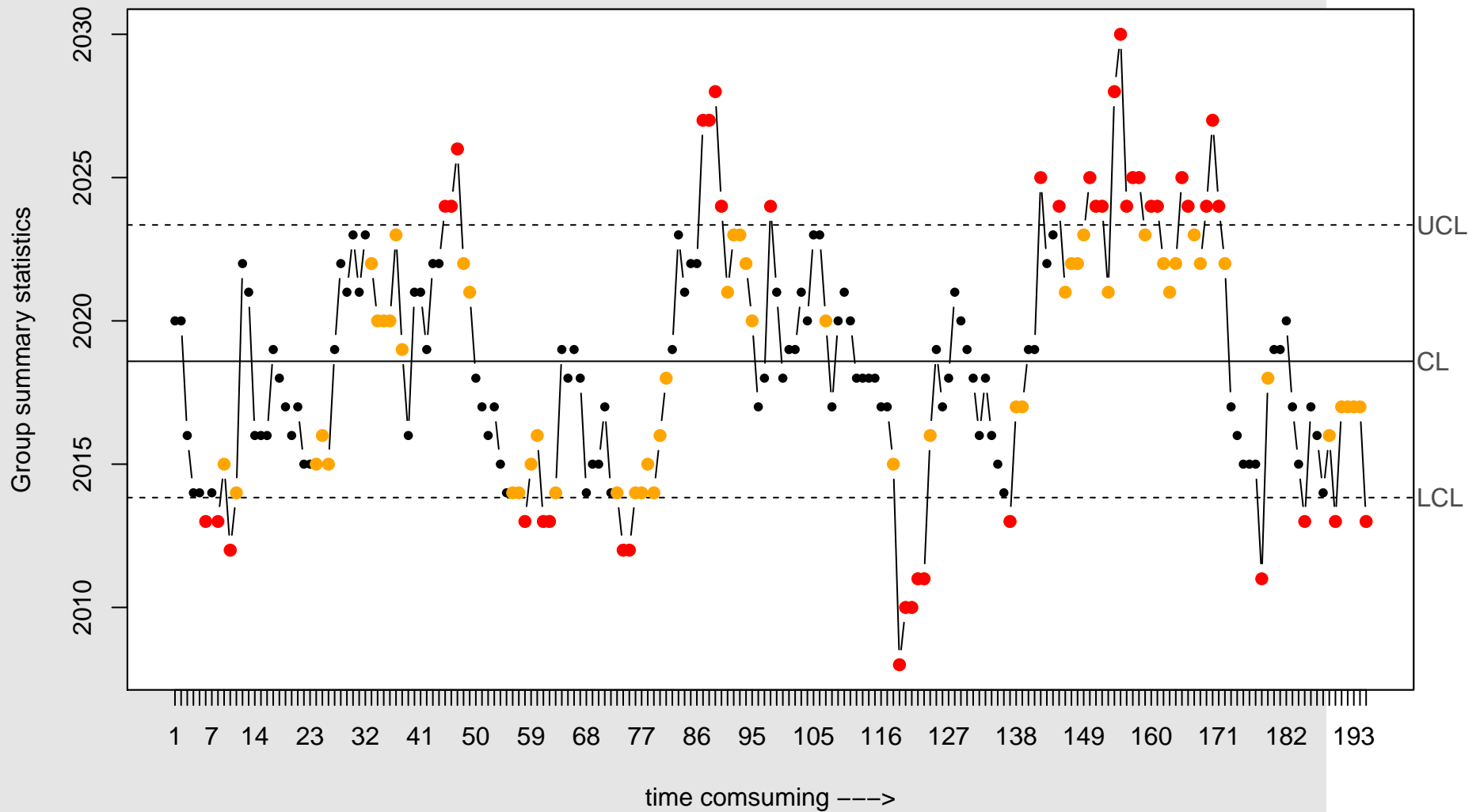
LCL = 2013.846

UCL = 2023.99

Number beyond limits = 42

Number violating runs = 89

## 203th column point of this product



Number of groups = 195

Center = 2018.59

StdDev = 1.585691

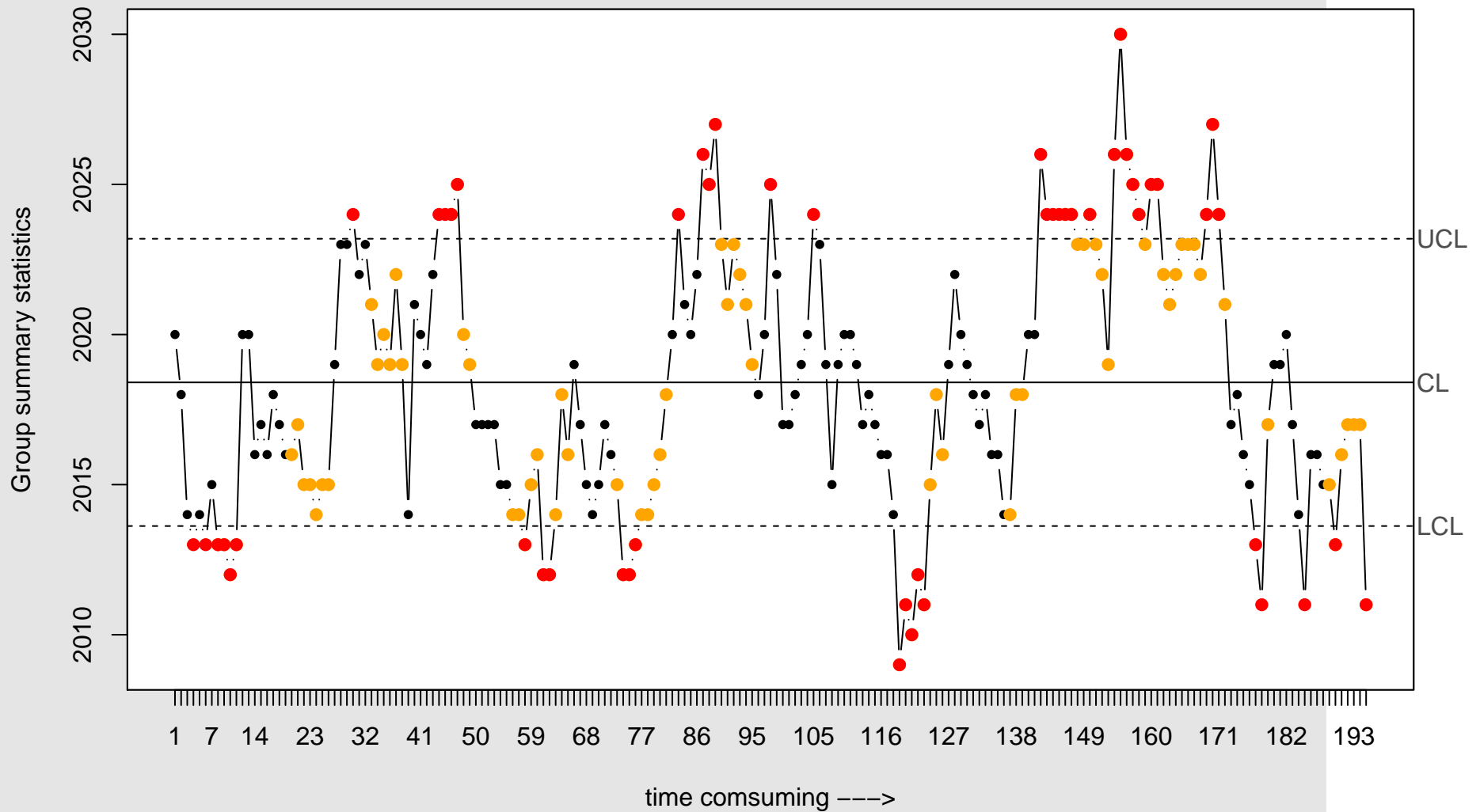
LCL = 2013.833

UCL = 2023.347

Number beyond limits = 43

Number violating runs = 87

## 204th column point of this product



Number of groups = 195

Center = 2018.405

StdDev = 1.594831

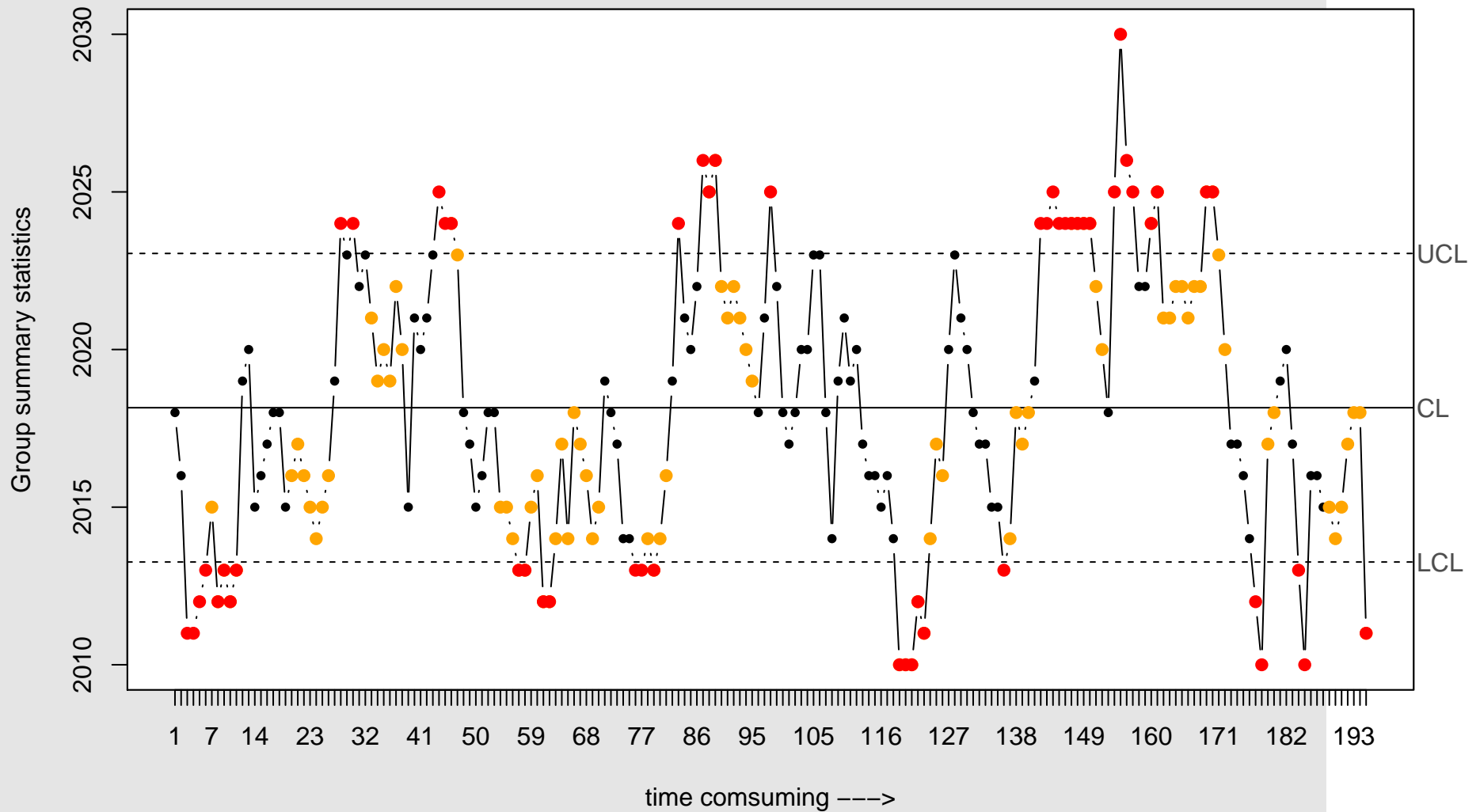
LCL = 2013.621

UCL = 2023.19

Number beyond limits = 50

Number violating runs = 94

## 205th column point of this product



Number of groups = 195

Center = 2018.154

StdDev = 1.631388

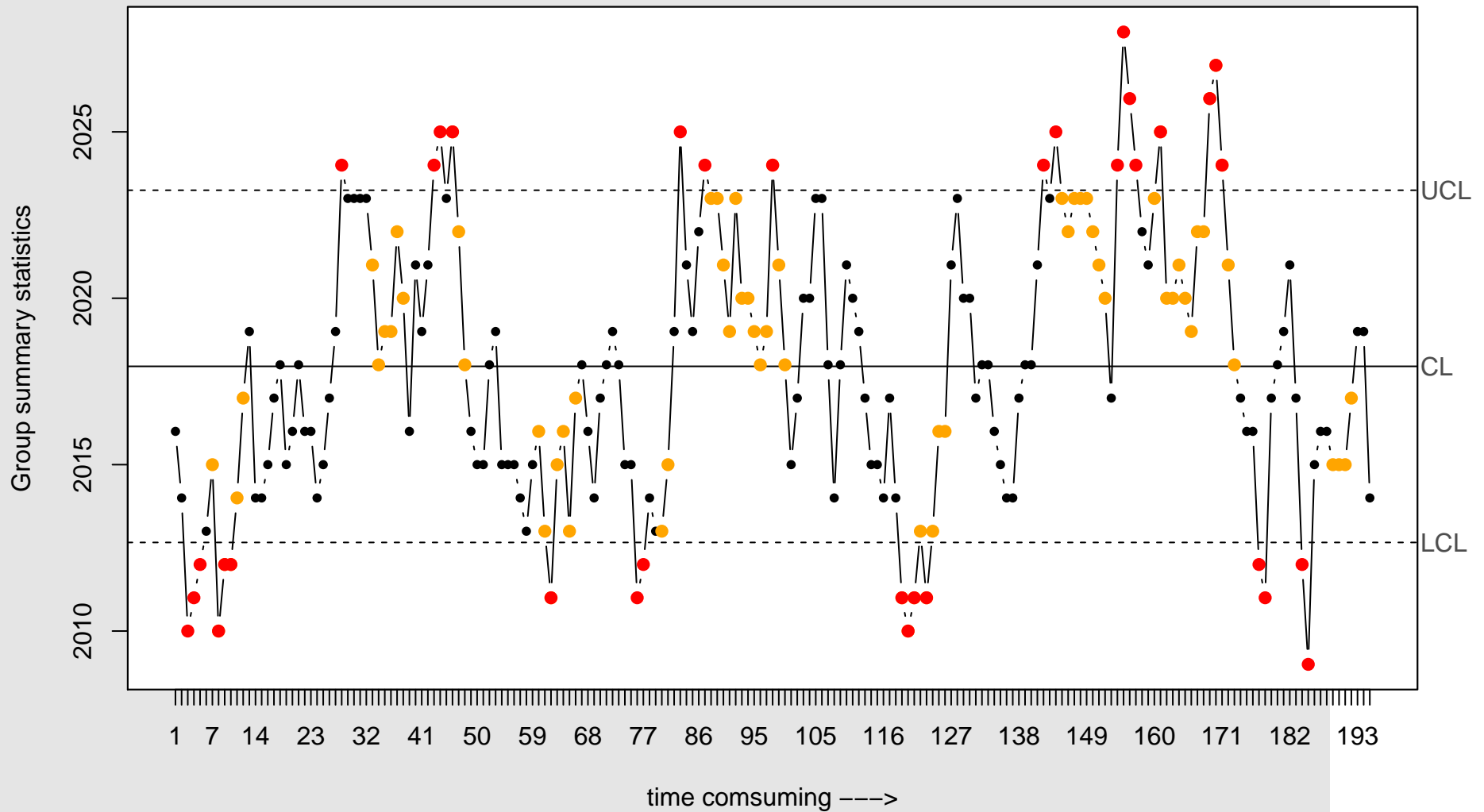
LCL = 2013.26

UCL = 2023.048

Number beyond limits = 53

Number violating runs = 89

## 206th column point of this product



Number of groups = 195

Center = 2017.954

StdDev = 1.76391

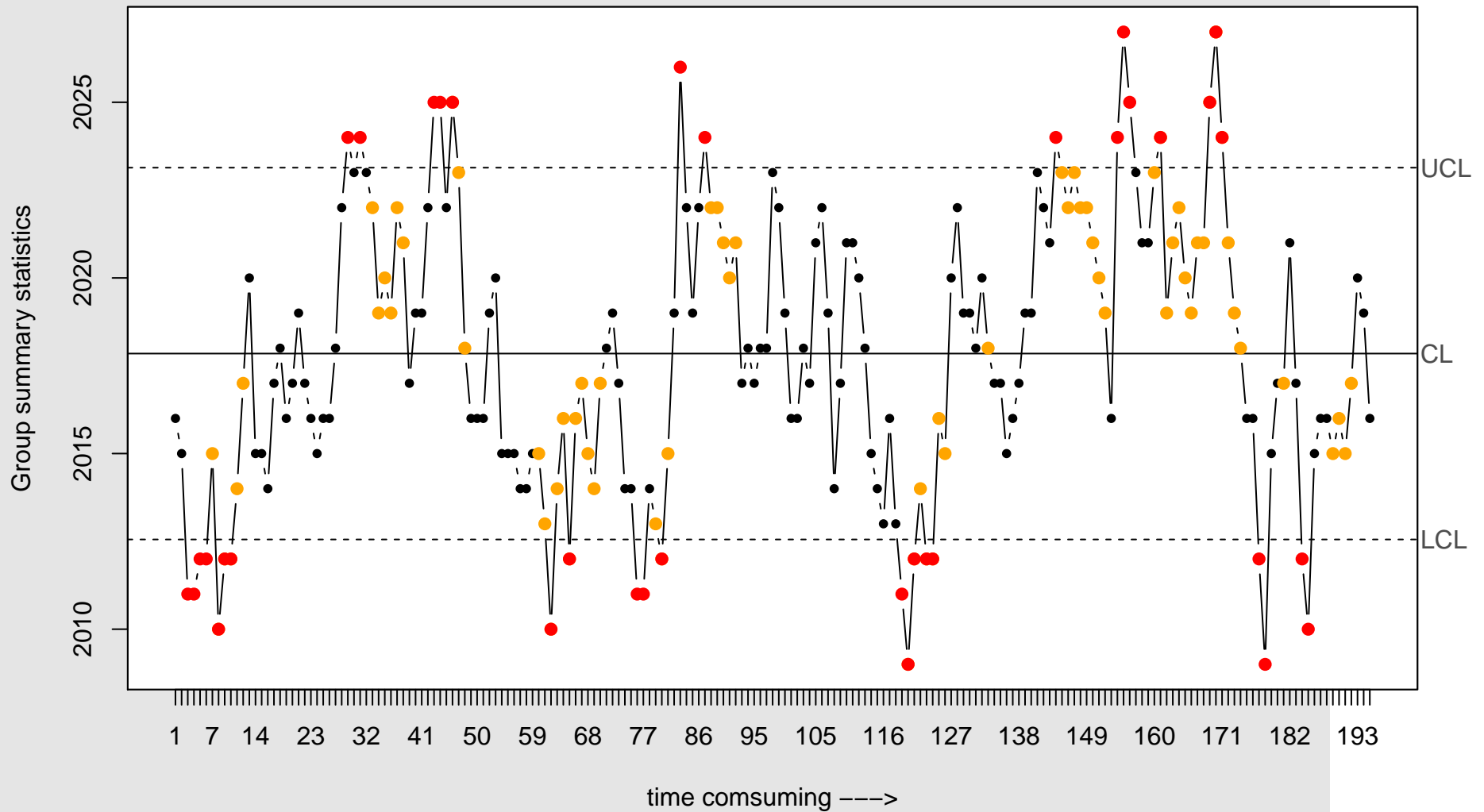
LCL = 2012.662

UCL = 2023.246

Number beyond limits = 34

Number violating runs = 71

## 207th column point of this product

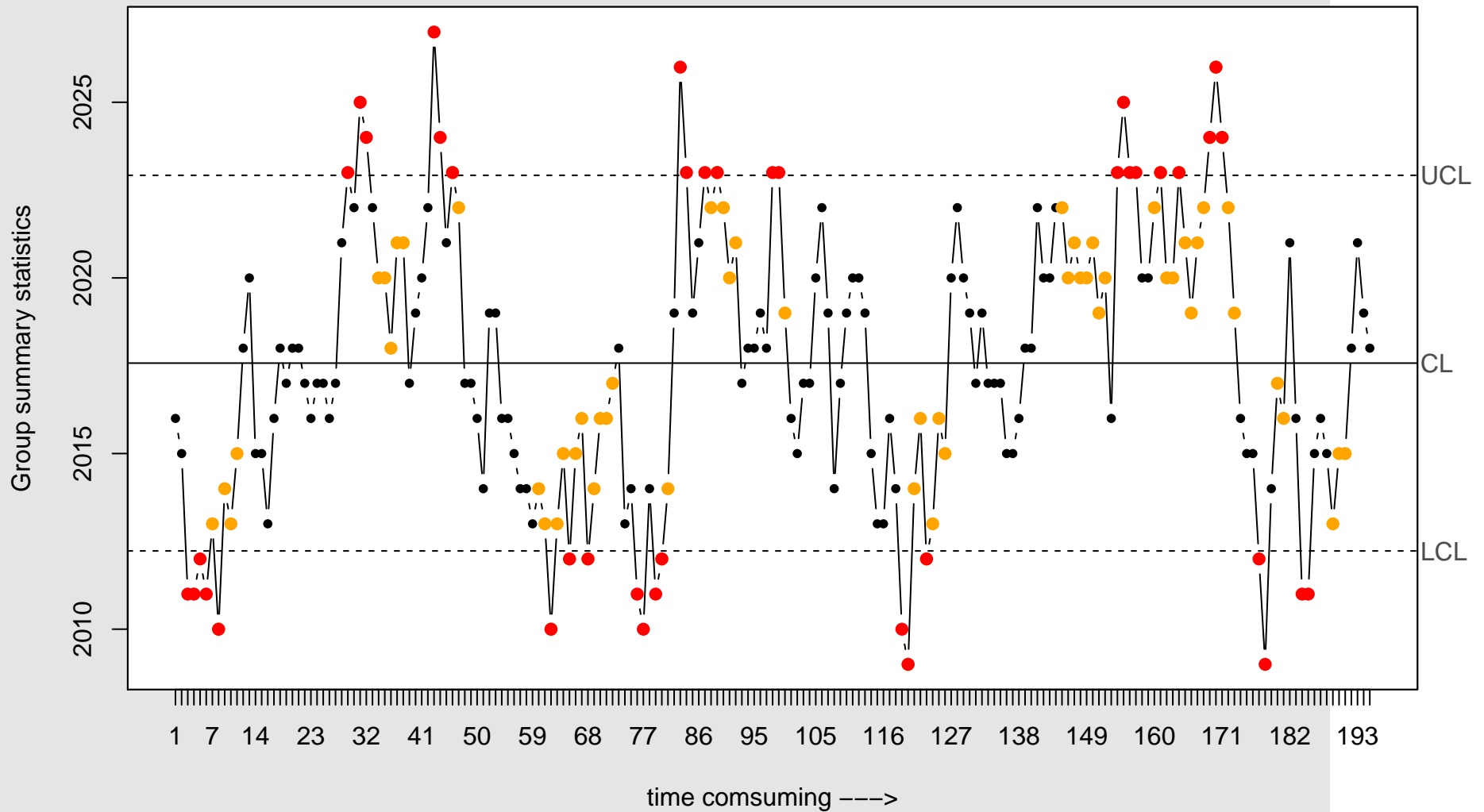


Number of groups = 195  
 Center = 2017.846  
 StdDev = 1.76391

LCL = 2012.554  
 UCL = 2023.138

Number beyond limits = 36  
 Number violating runs = 70

## 208th column point of this product



Number of groups = 195

Center = 2017.574

StdDev = 1.782189

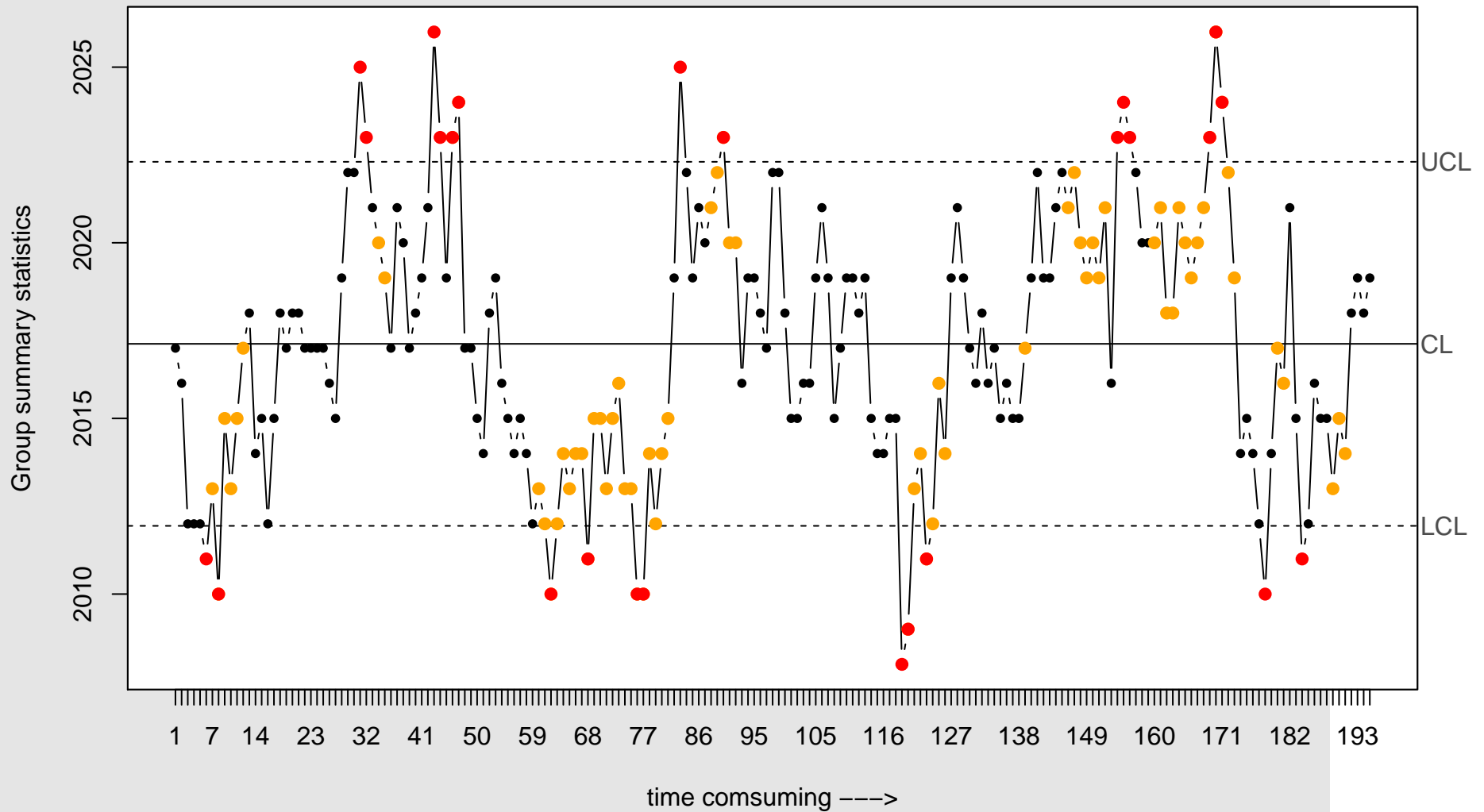
LCL = 2012.228

UCL = 2022.921

Number beyond limits = 40

Number violating runs = 67

## 209th column point of this product



Number of groups = 195

Center = 2017.123

StdDev = 1.727352

LCL = 2011.941

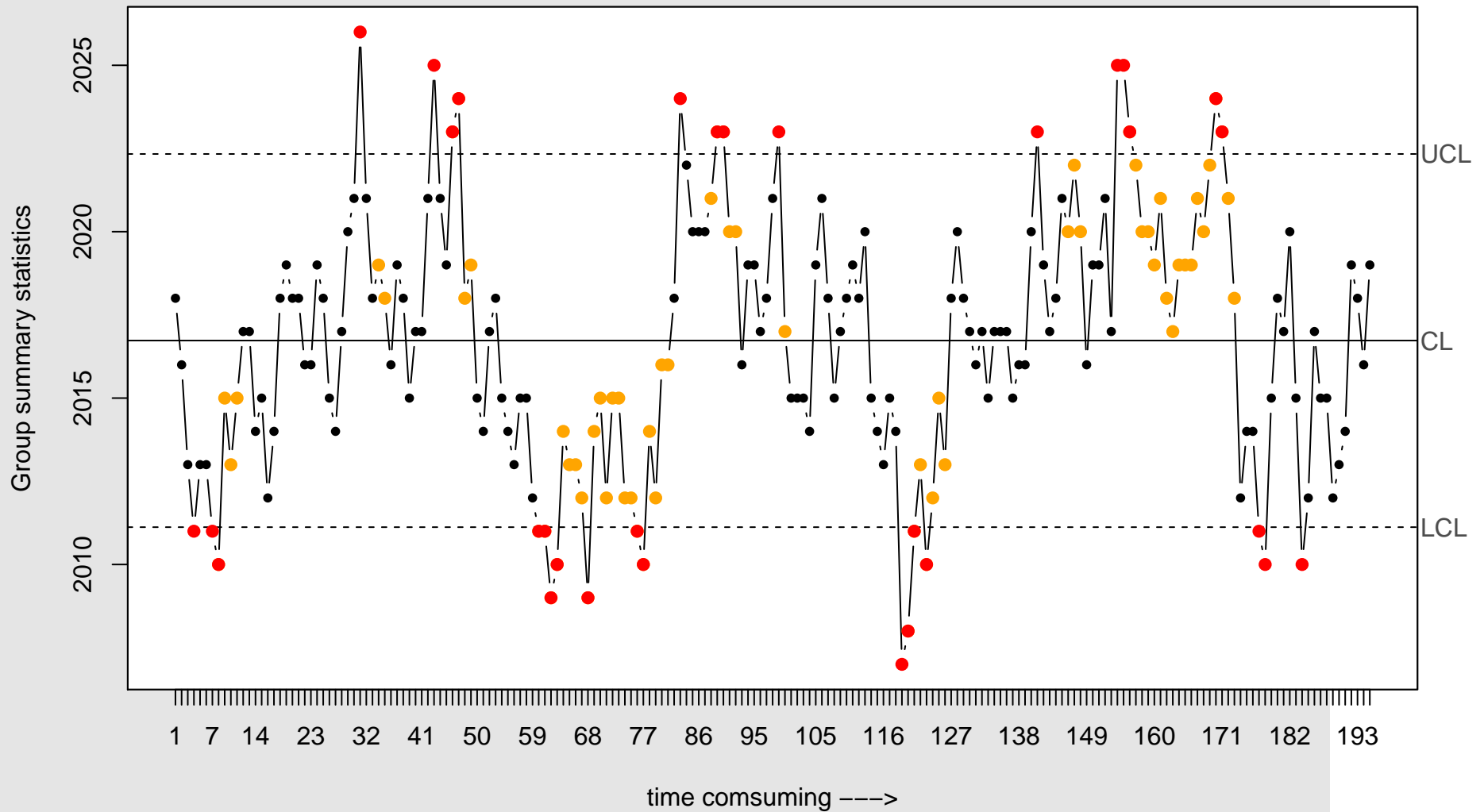
UCL = 2022.305

Number beyond limits = 25

Number violating runs = 71



## 210th column point of this product



Number of groups = 195

Center = 2016.728

StdDev = 1.869014

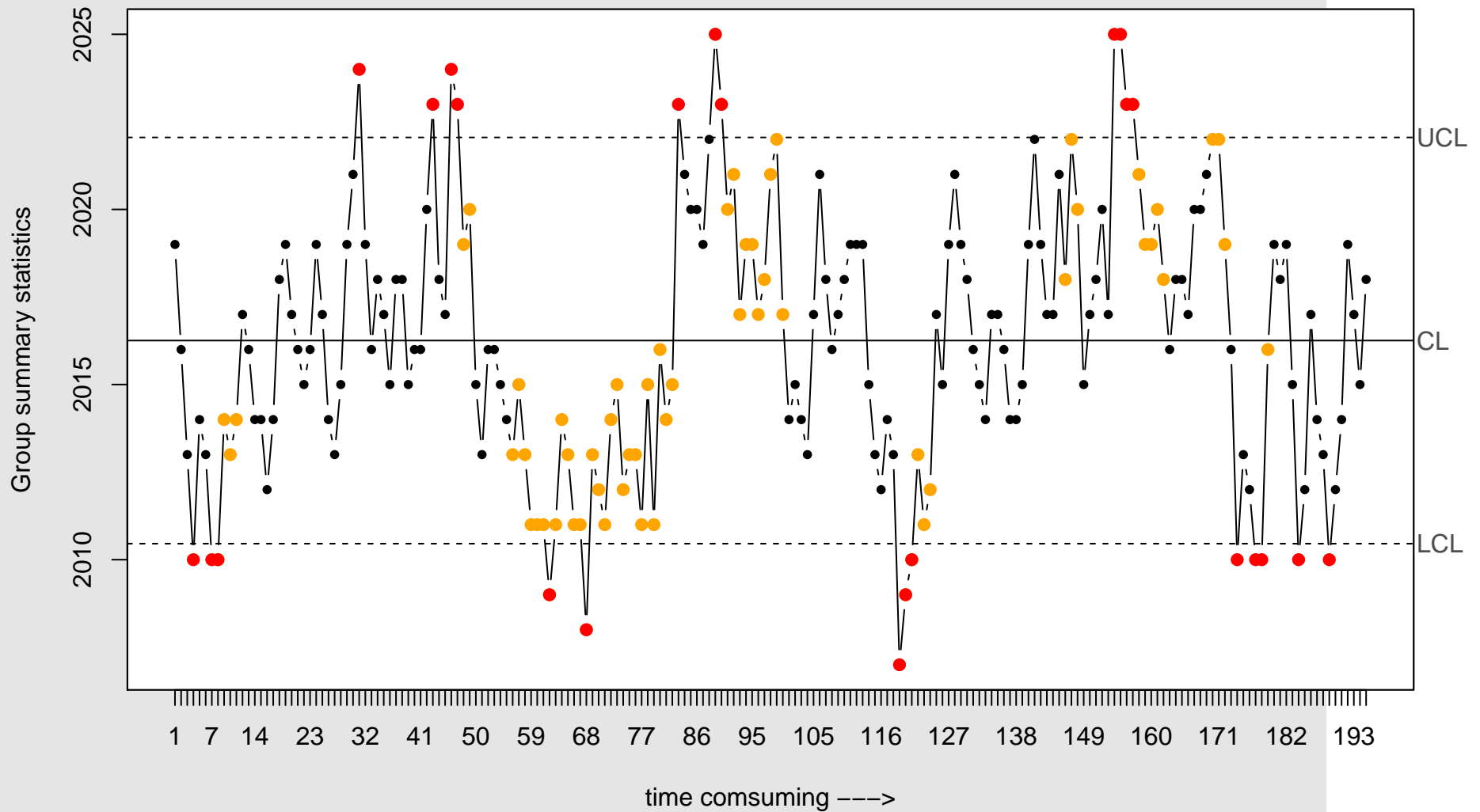
LCL = 2011.121

UCL = 2022.335

Number beyond limits = 31

Number violating runs = 66

## 211th column point of this product

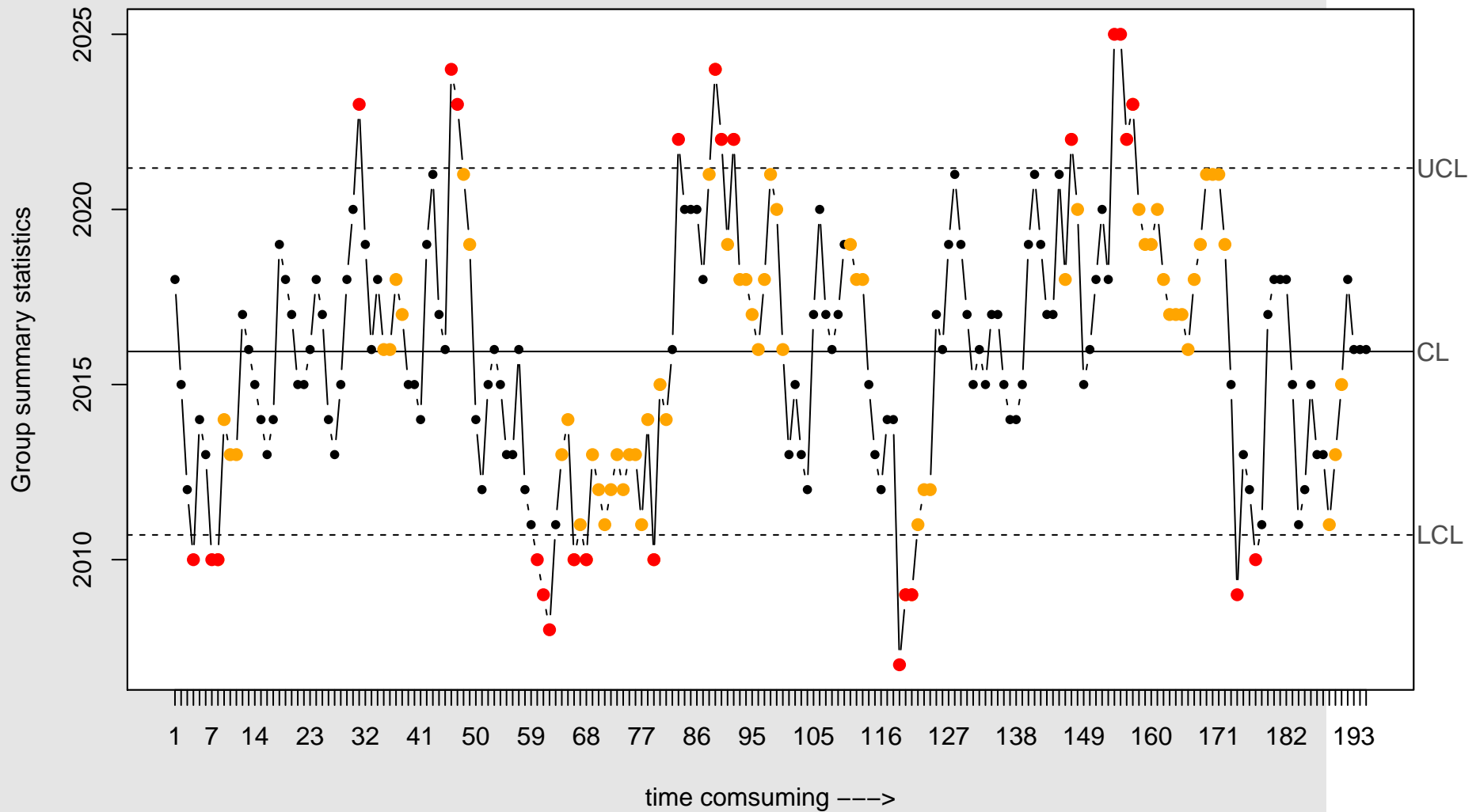


Number of groups = 195  
 Center = 2016.256  
 StdDev = 1.93299

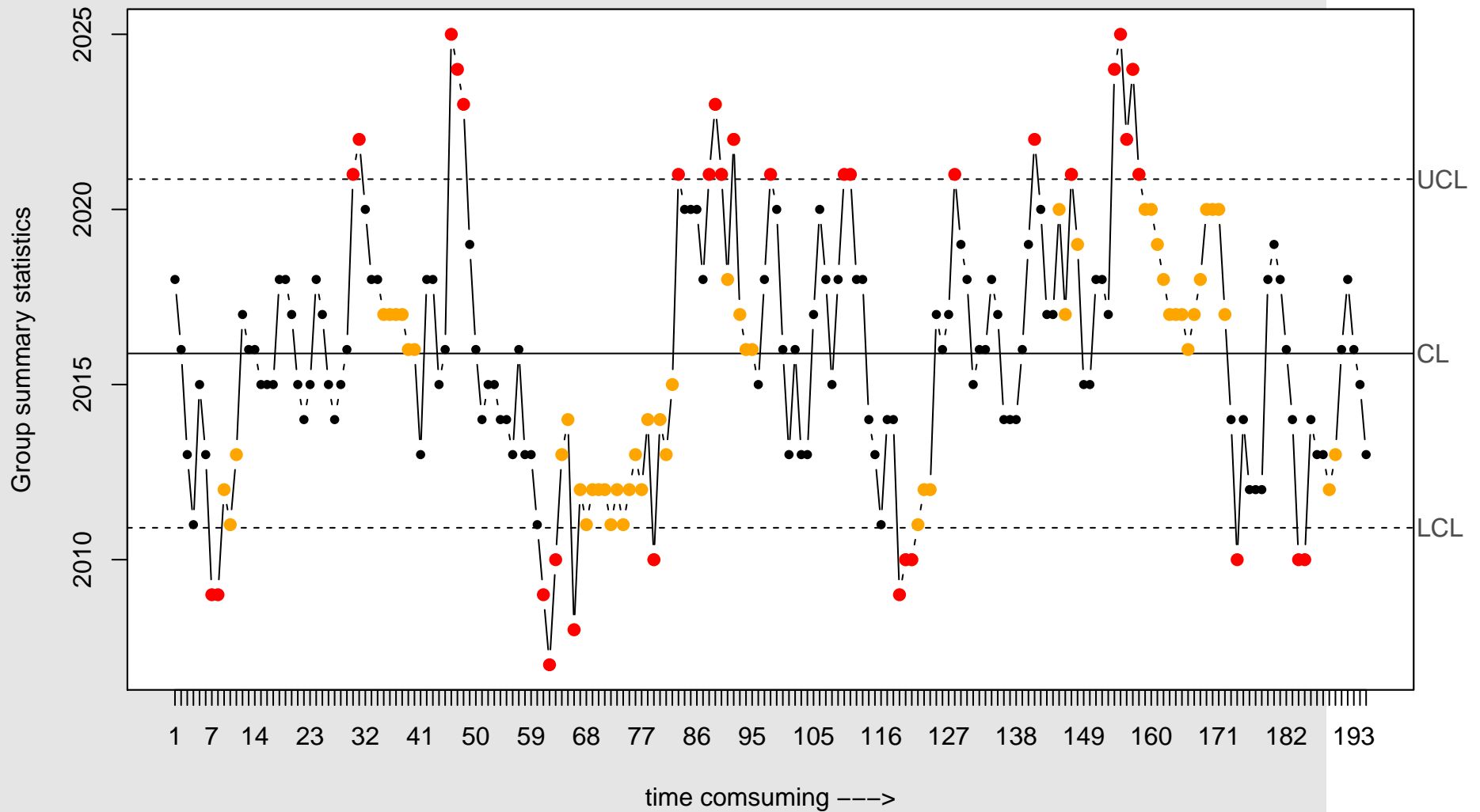
LCL = 2010.457  
 UCL = 2022.055

Number beyond limits = 24  
 Number violating runs = 64

## 212th column point of this product



## 213th column point of this product

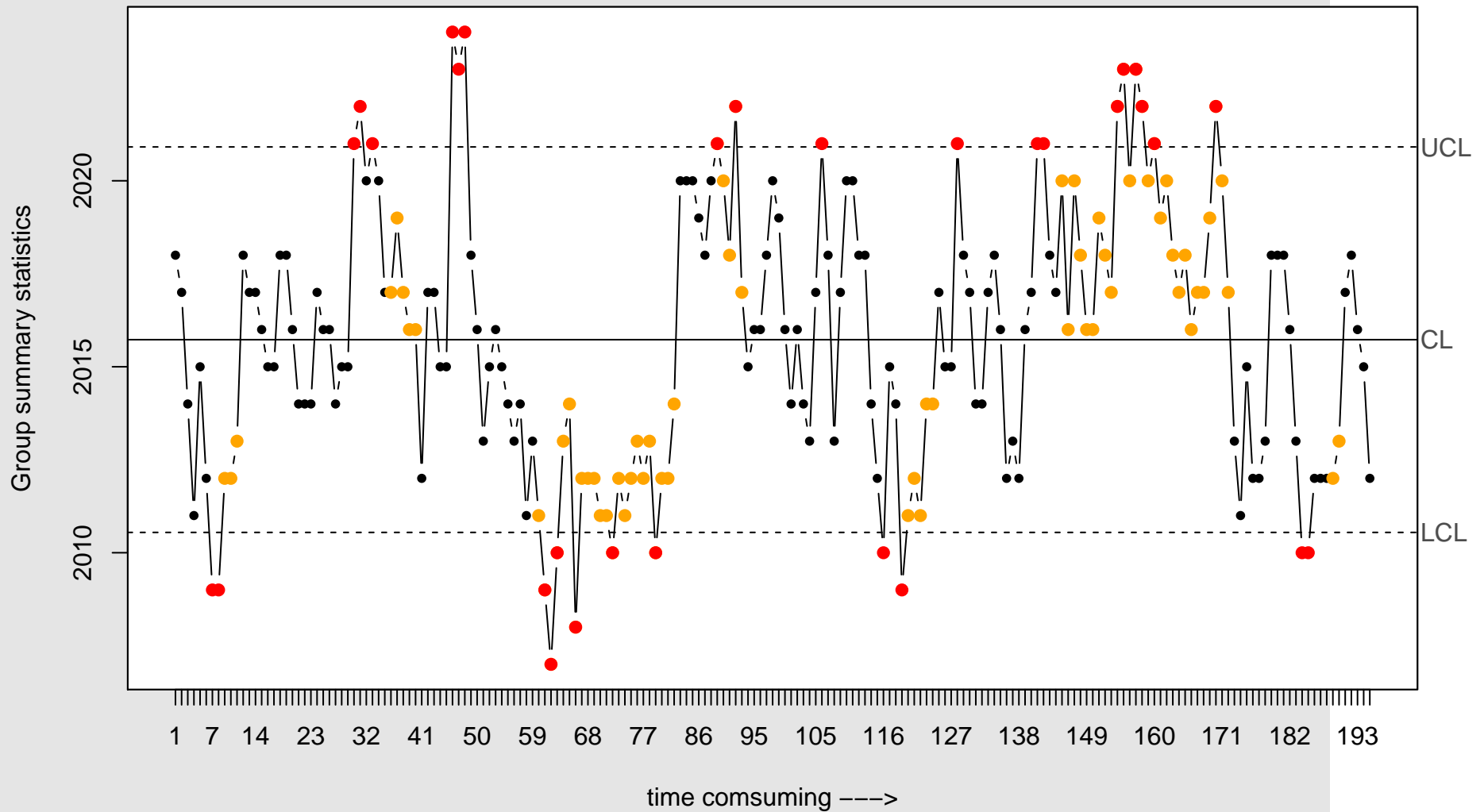


Number of groups = 195  
 Center = 2015.887  
 StdDev = 1.658807

LCL = 2010.911  
 UCL = 2020.864

Number beyond limits = 34  
 Number violating runs = 62

## 214th column point of this product



Number of groups = 195

Center = 2015.728

StdDev = 1.727352

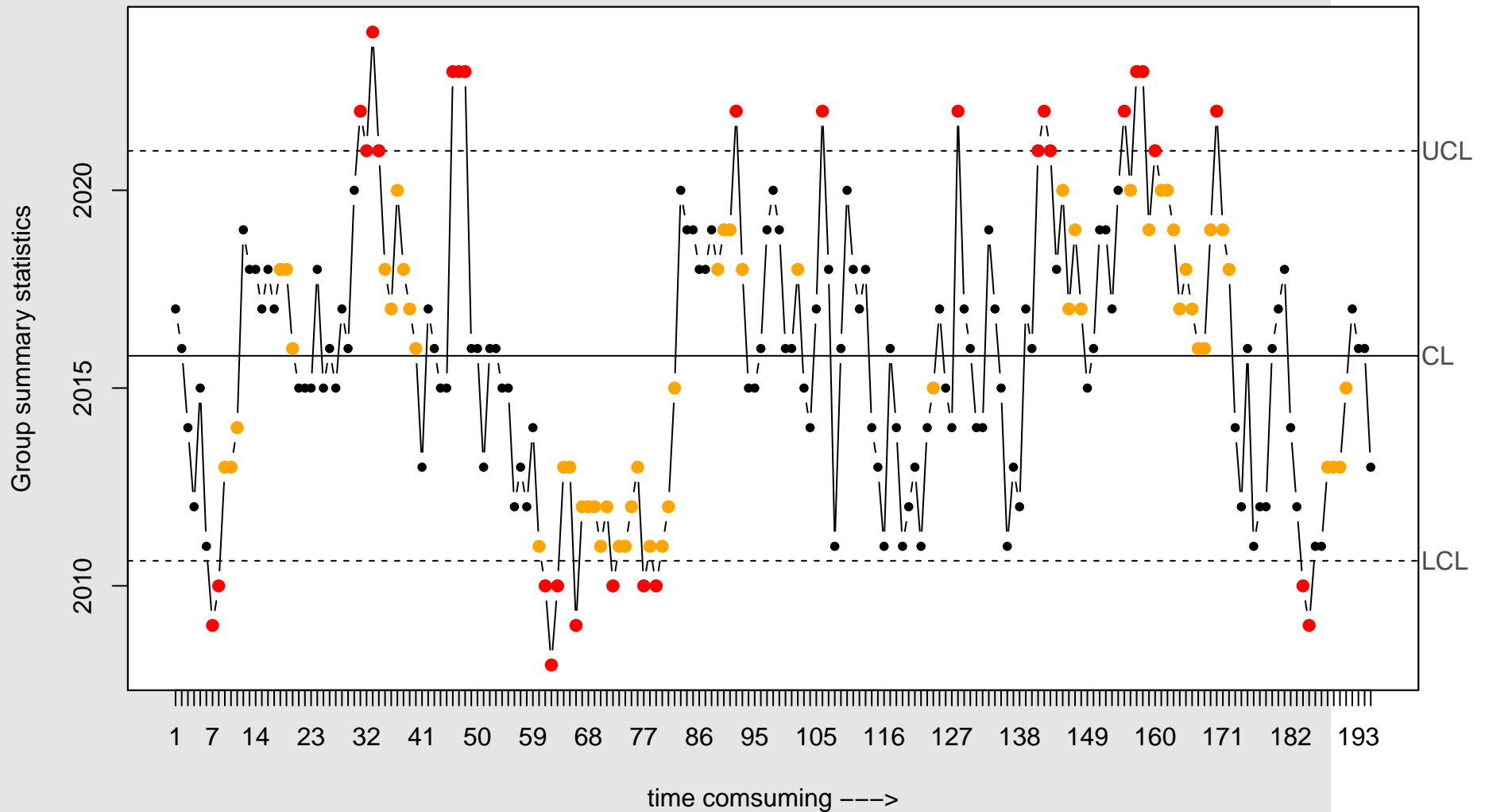
LCL = 2010.546

UCL = 2020.91

Number beyond limits = 30

Number violating runs = 71

## 215th column point of this product



Number of groups = 195

Center = 2015.815

StdDev = 1.727352

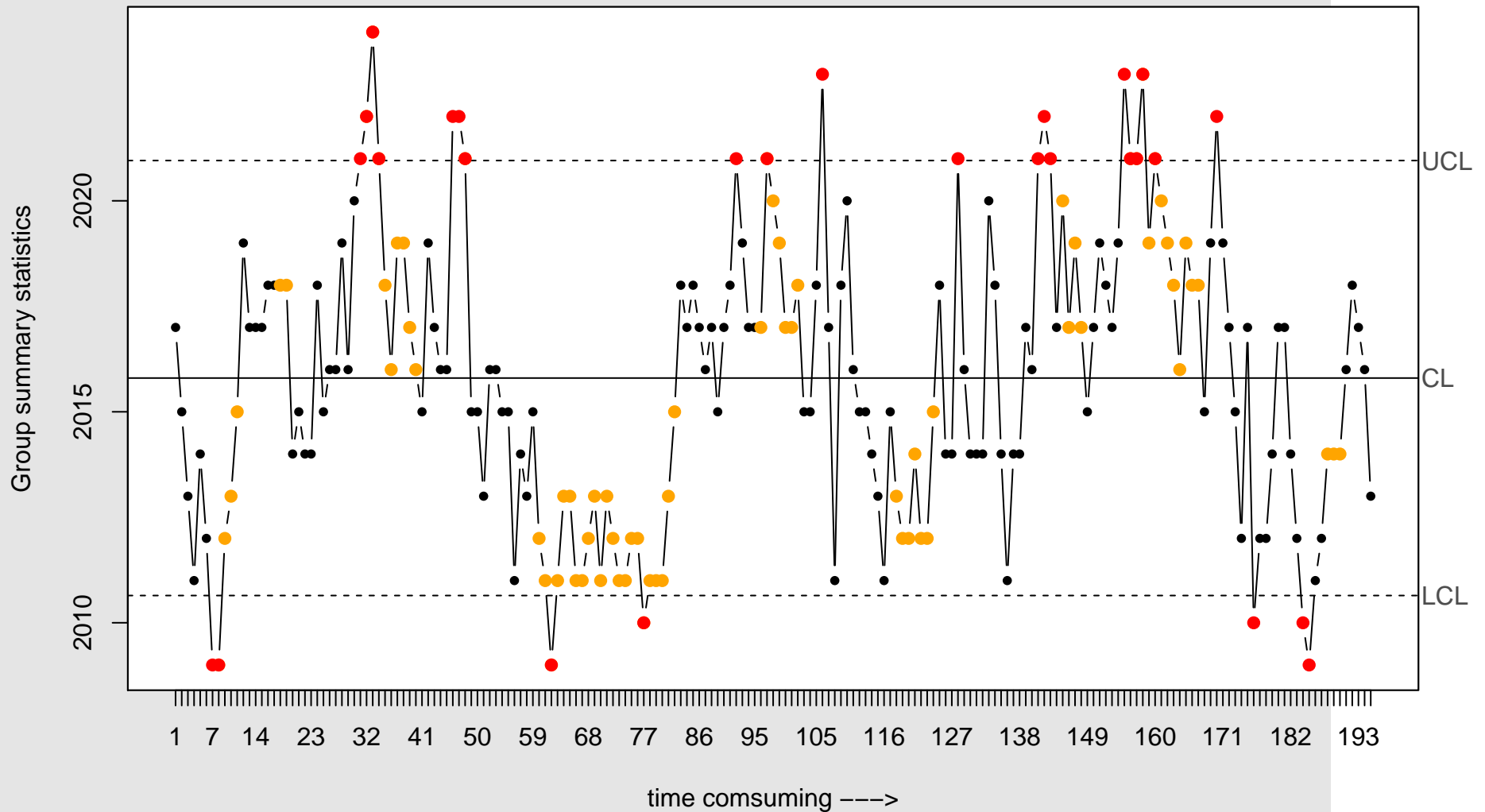
LCL = 2010.633

UCL = 2020.997

Number beyond limits = 29

Number violating runs = 68

## 216th column point of this product



Number of groups = 195

Center = 2015.8

StdDev = 1.718213

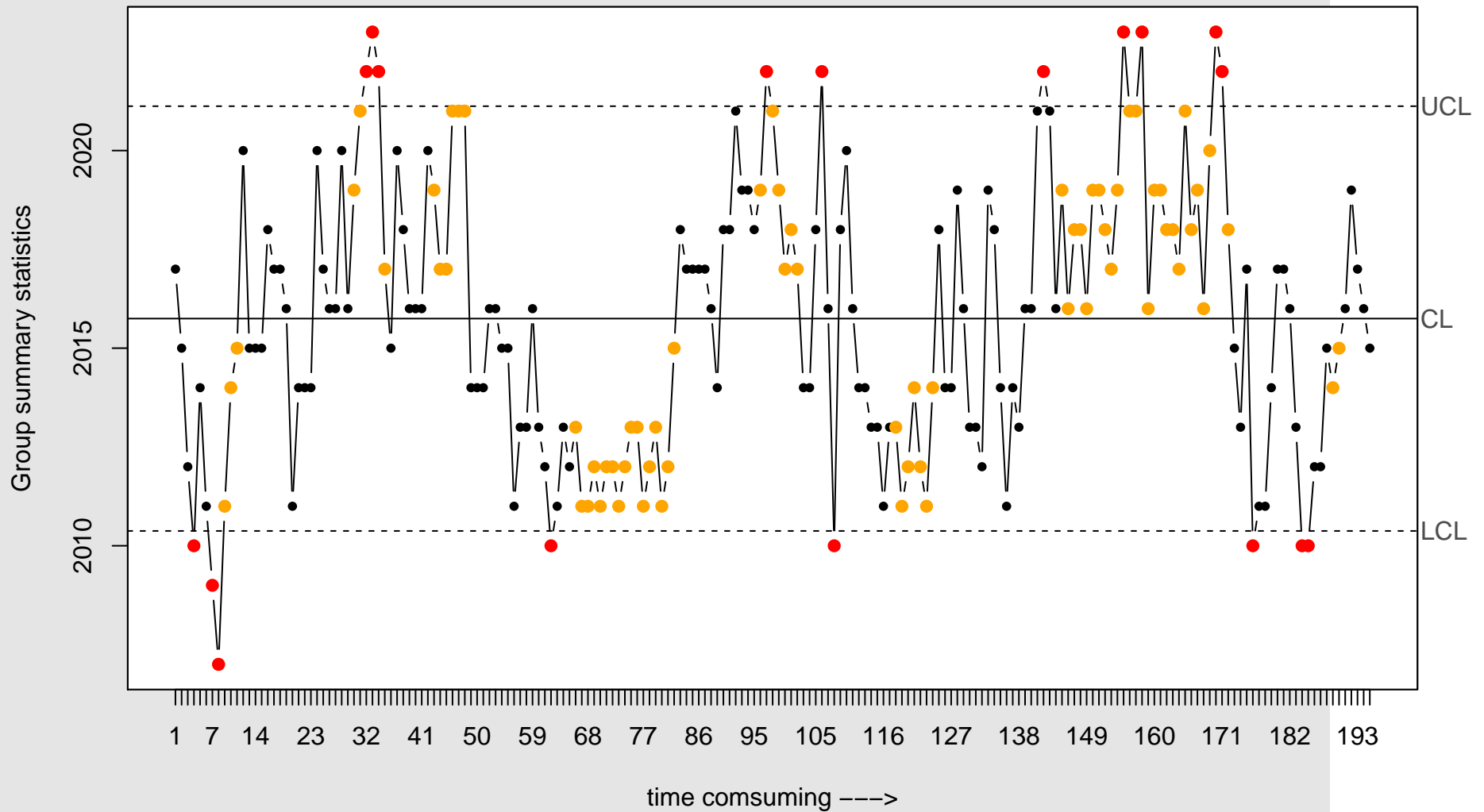
LCL = 2010.645

UCL = 2020.955

Number beyond limits = 27

Number violating runs = 72

## 217th column point of this product



Number of groups = 195

Center = 2015.749

StdDev = 1.791329

LCL = 2010.375

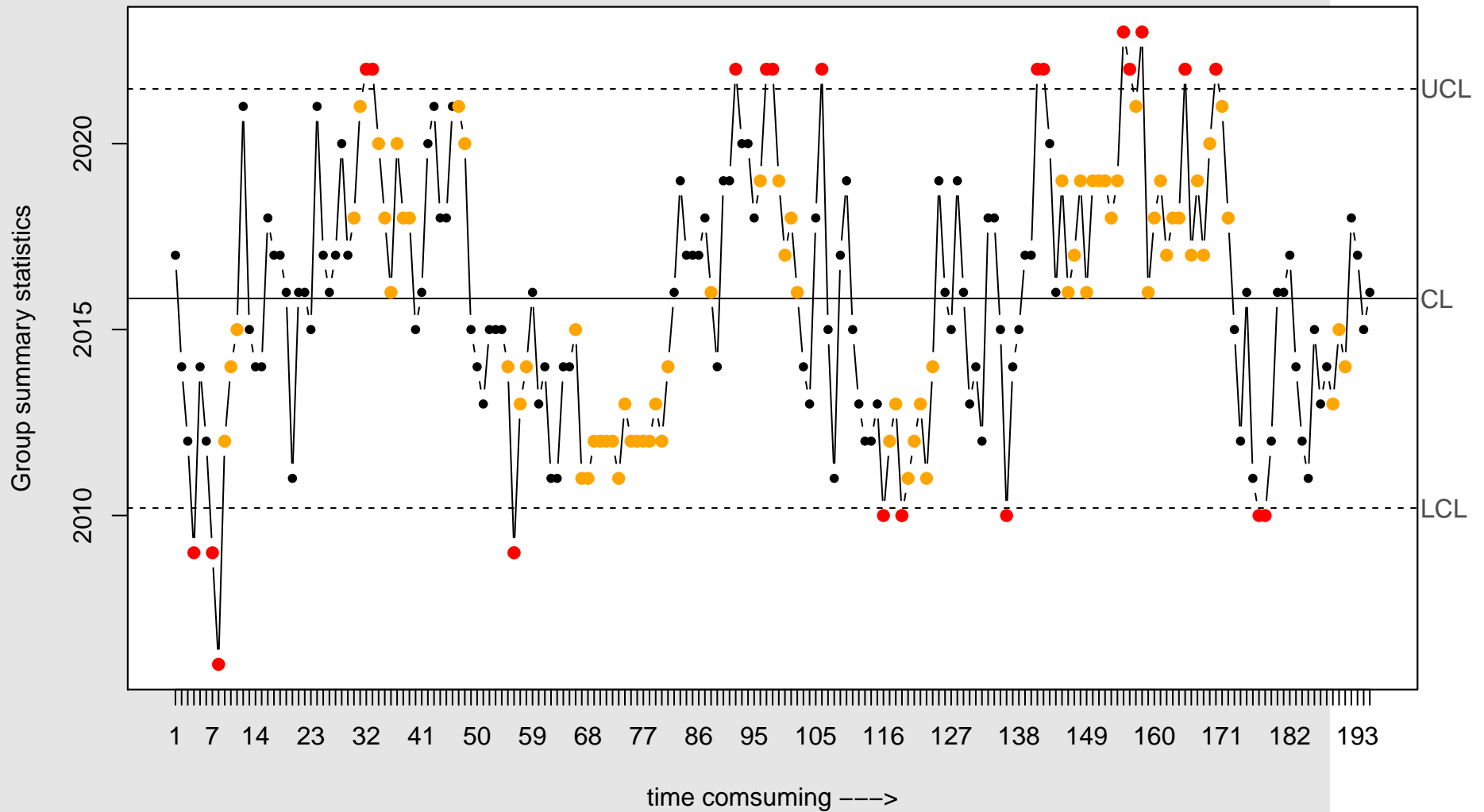
UCL = 2021.123

Number beyond limits = 18

Number violating runs = 77



## 218th column point of this product



Number of groups = 195

Center = 2015.836

StdDev = 1.878153

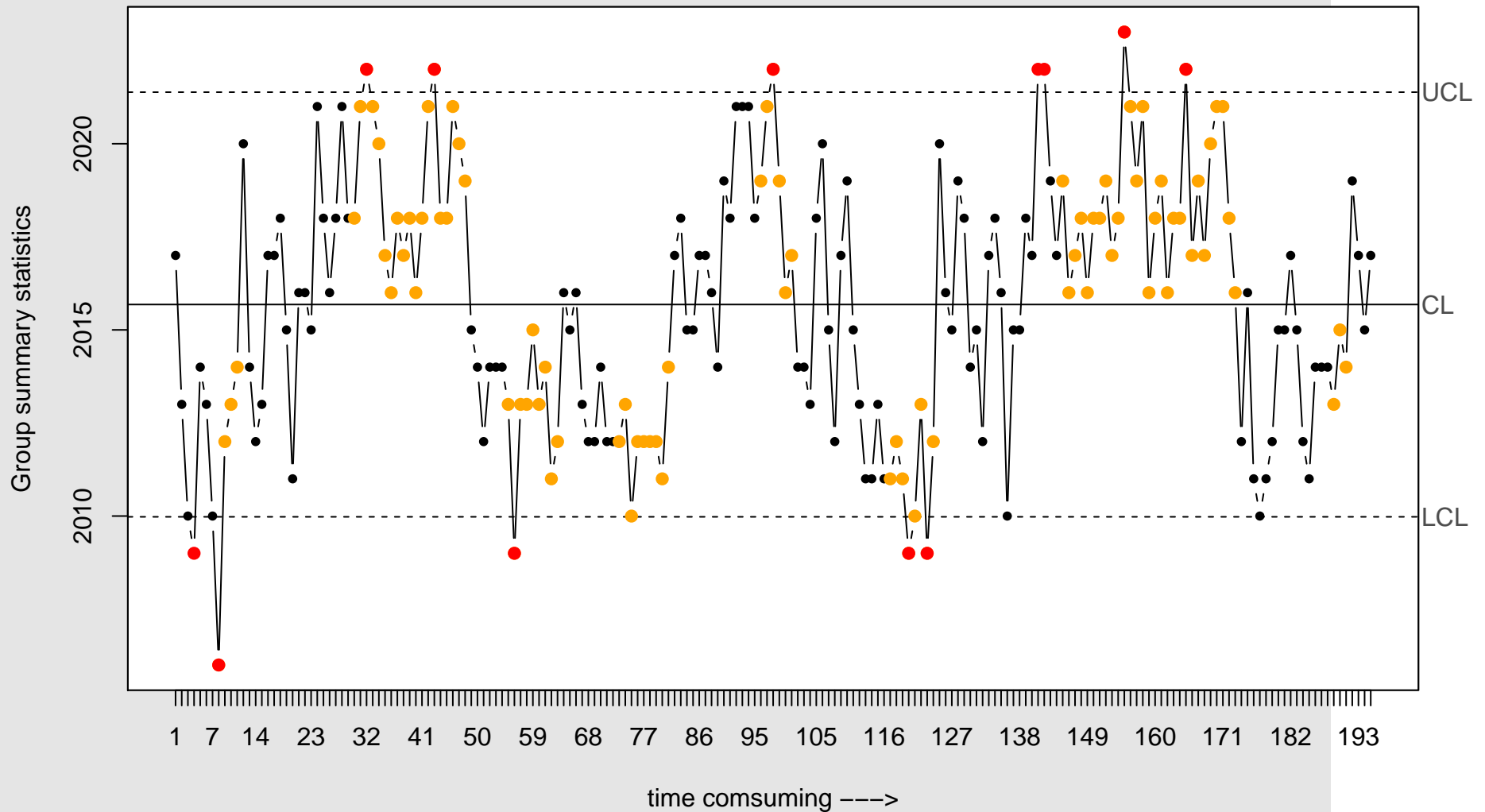
LCL = 2010.201

UCL = 2021.47

Number beyond limits = 22

Number violating runs = 83

## 219th column point of this product



Number of groups = 195

Center = 2015.682

StdDev = 1.901002

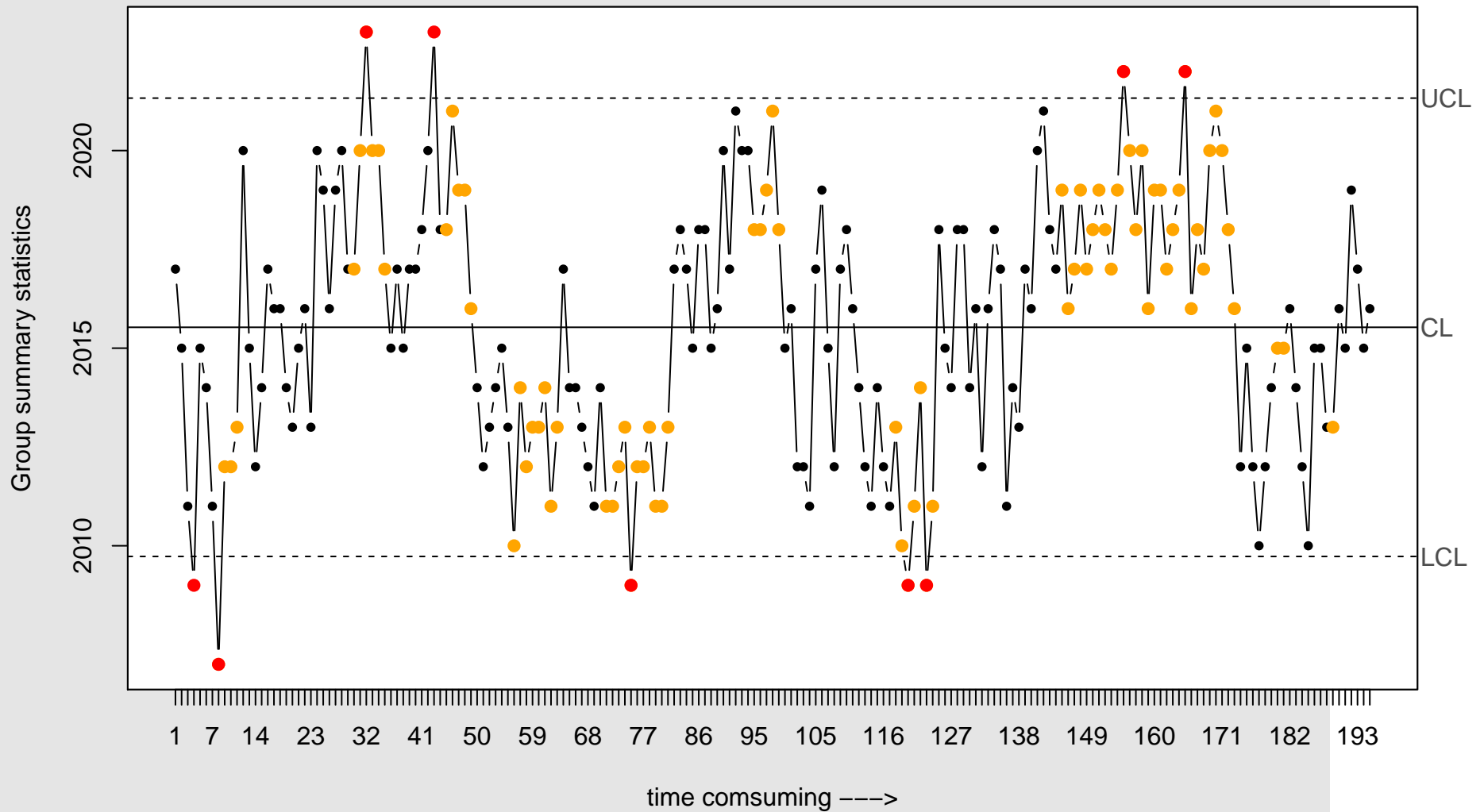
LCL = 2009.979

UCL = 2021.385

Number beyond limits = 12

Number violating runs = 87

## 220th column point of this product



Number of groups = 195

Center = 2015.528

StdDev = 1.93299

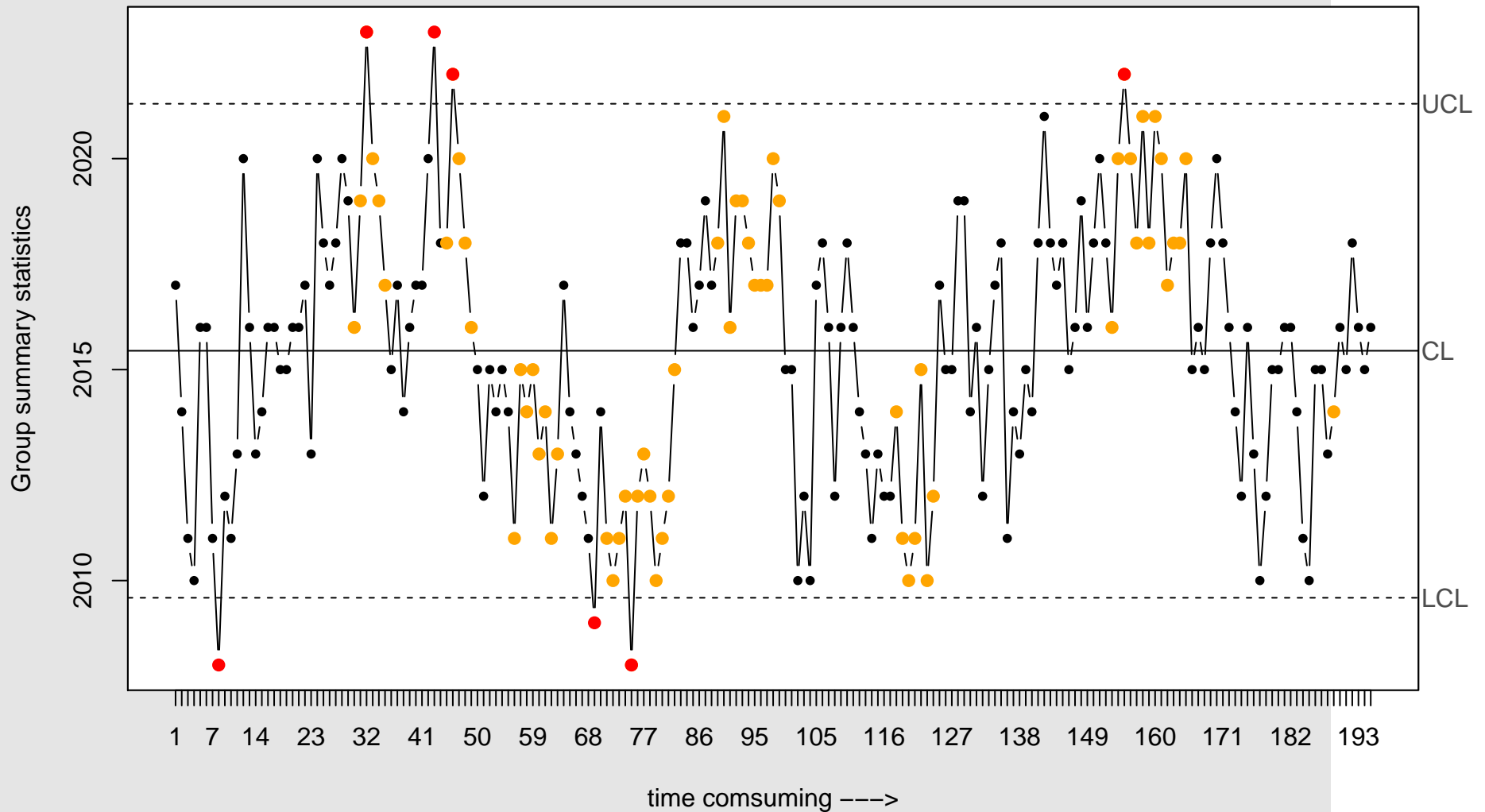
LCL = 2009.729

UCL = 2021.327

Number beyond limits = 9

Number violating runs = 78

## 221th column point of this product



Number of groups = 195

Center = 2015.446

StdDev = 1.951269

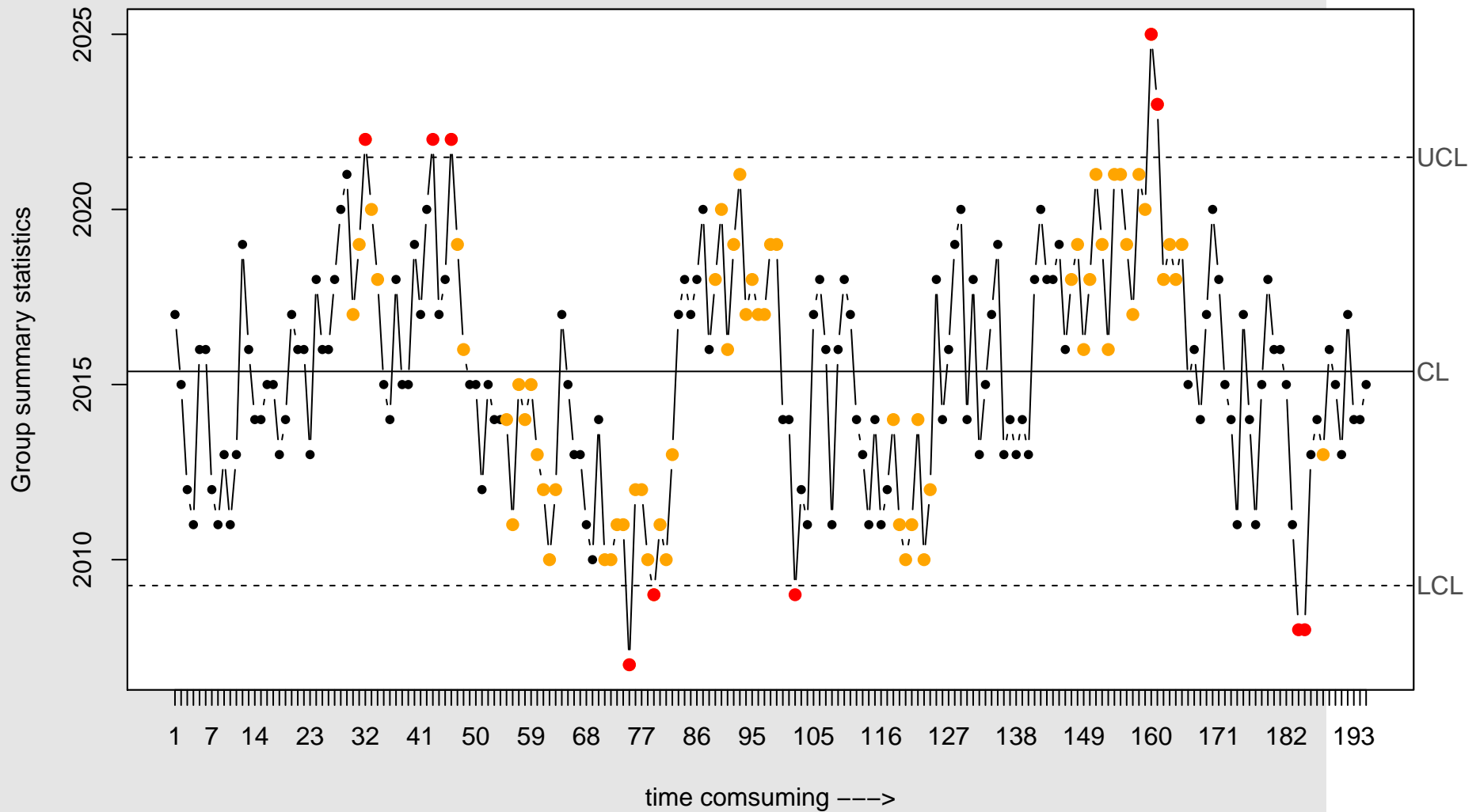
LCL = 2009.592

UCL = 2021.3

Number beyond limits = 7

Number violating runs = 63

## 222th column point of this product

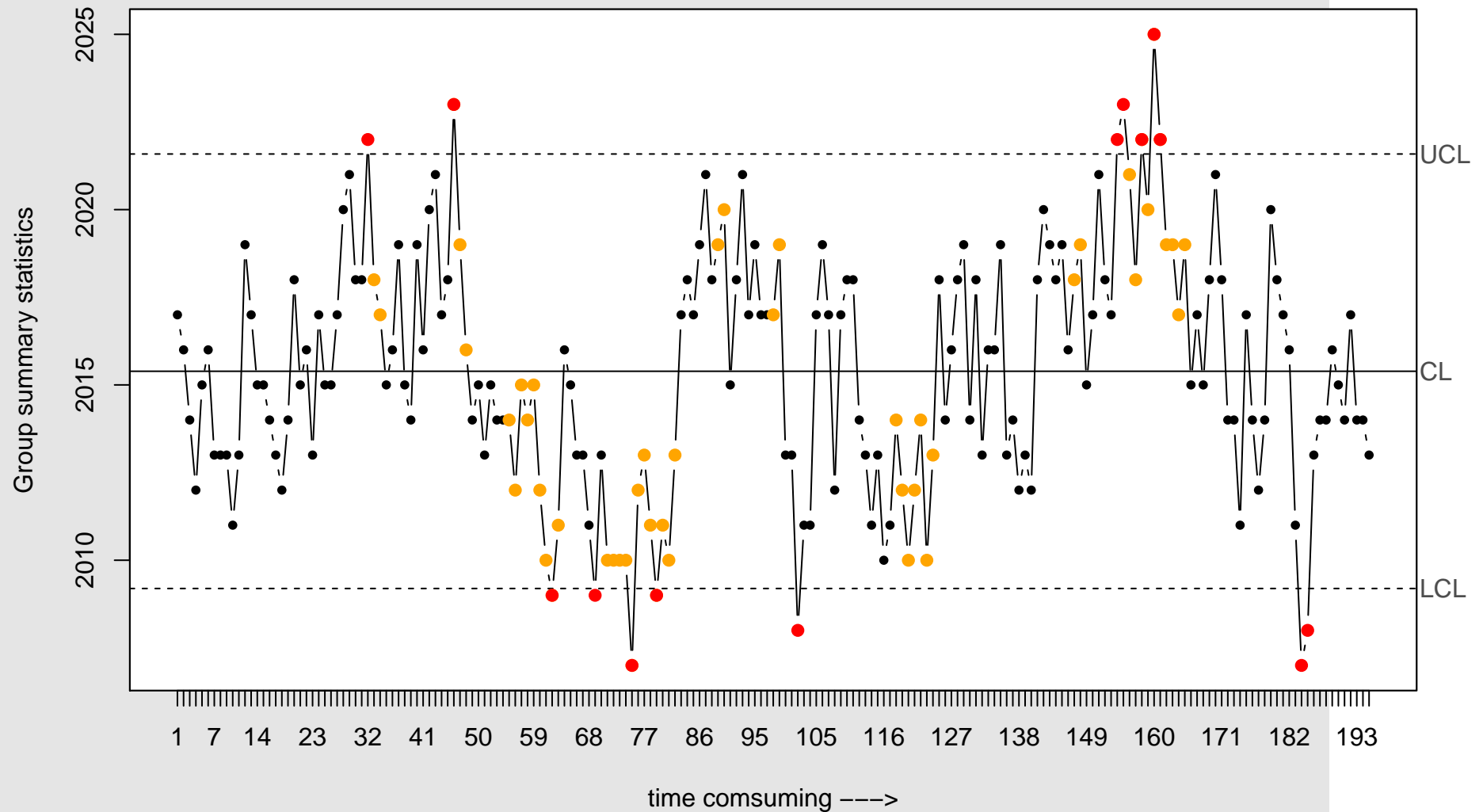


Number of groups = 195  
 Center = 2015.374  
 StdDev = 2.038093

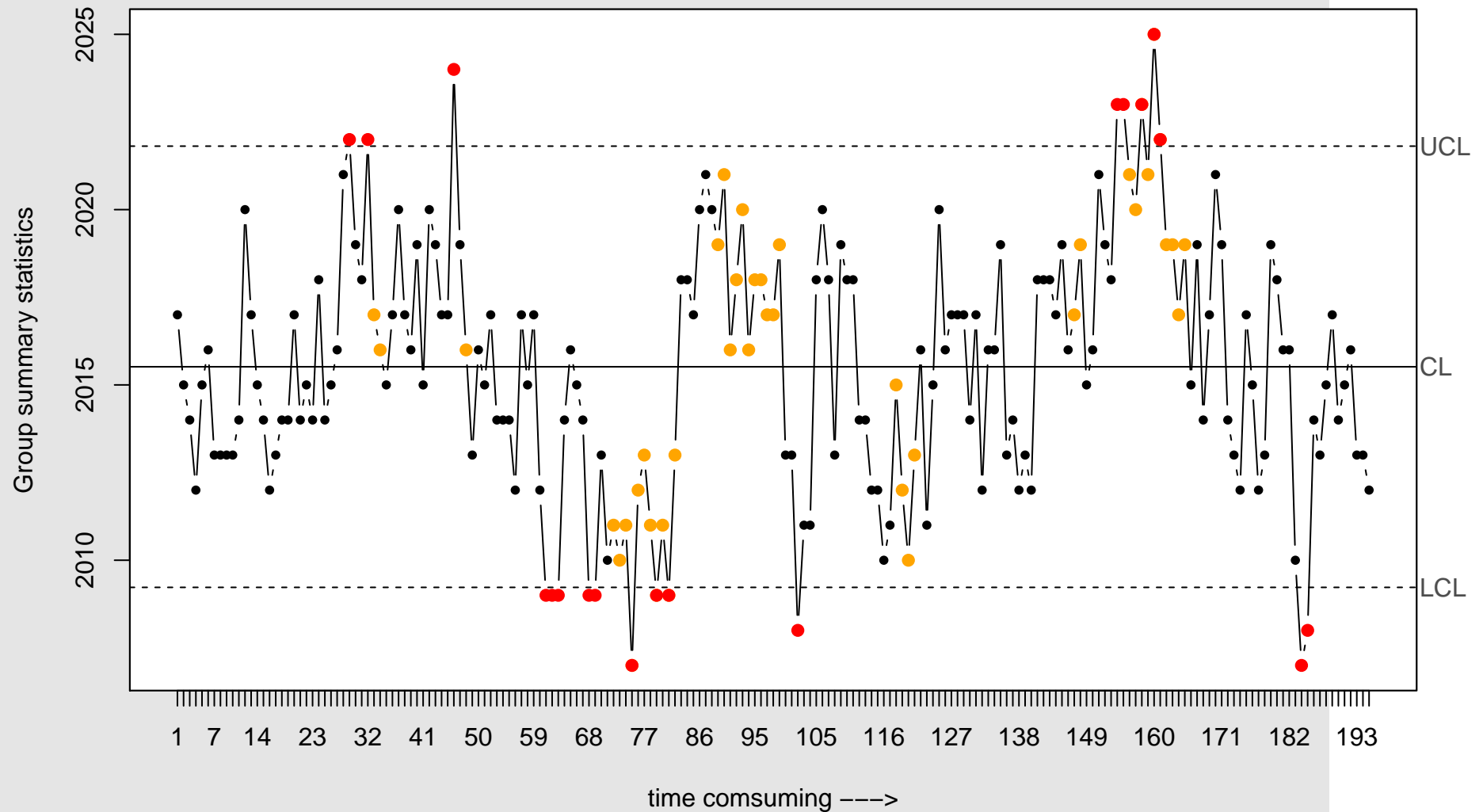
LCL = 2009.26  
 UCL = 2021.489

Number beyond limits = 10  
 Number violating runs = 67

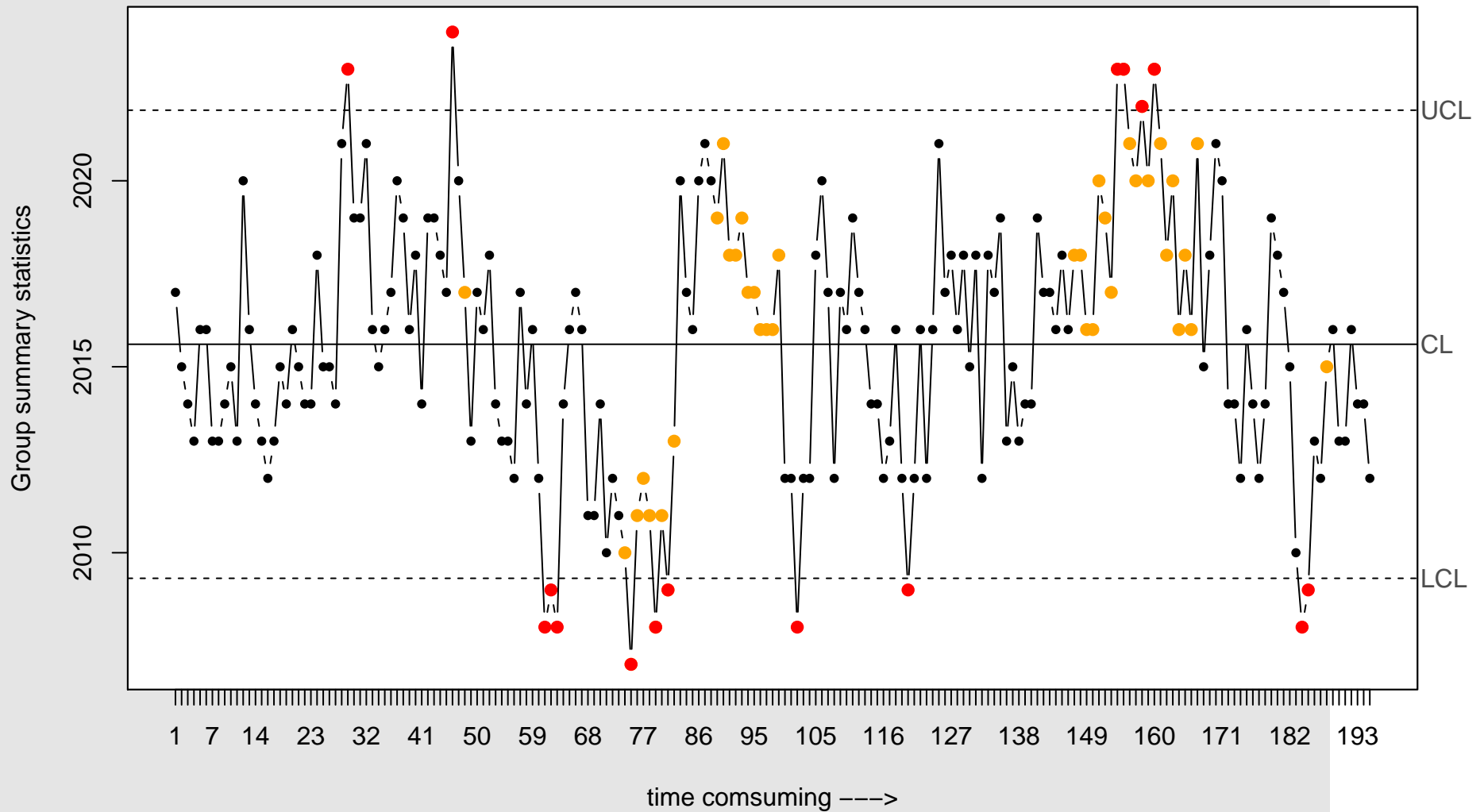
## 223th column point of this product



## 224th column point of this product



## 225th column point of this product



Number of groups = 195

Center = 2015.605

StdDev = 2.097499

LCL = 2009.313

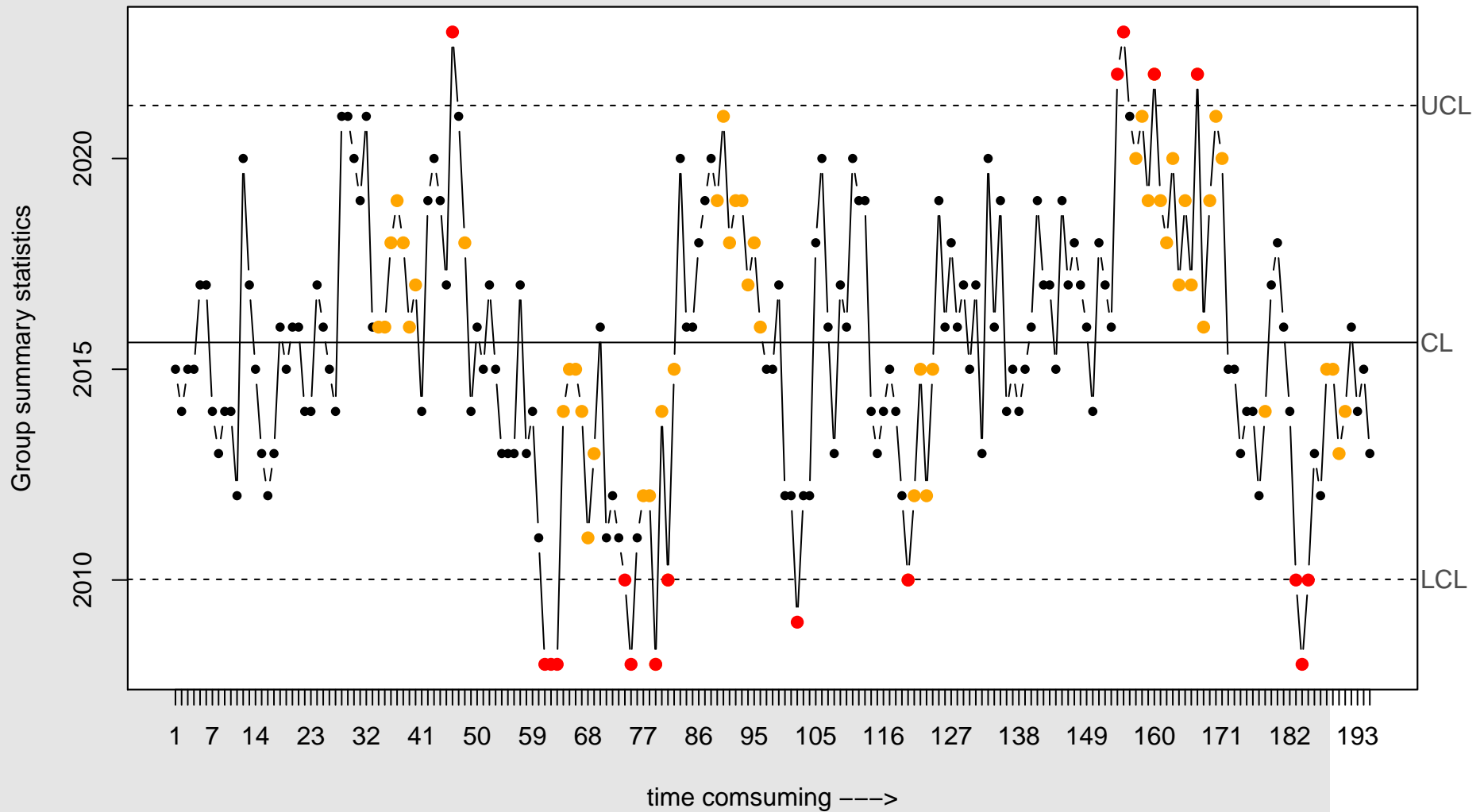
UCL = 2021.898

Number beyond limits = 16

Number violating runs = 43



## 226th column point of this product

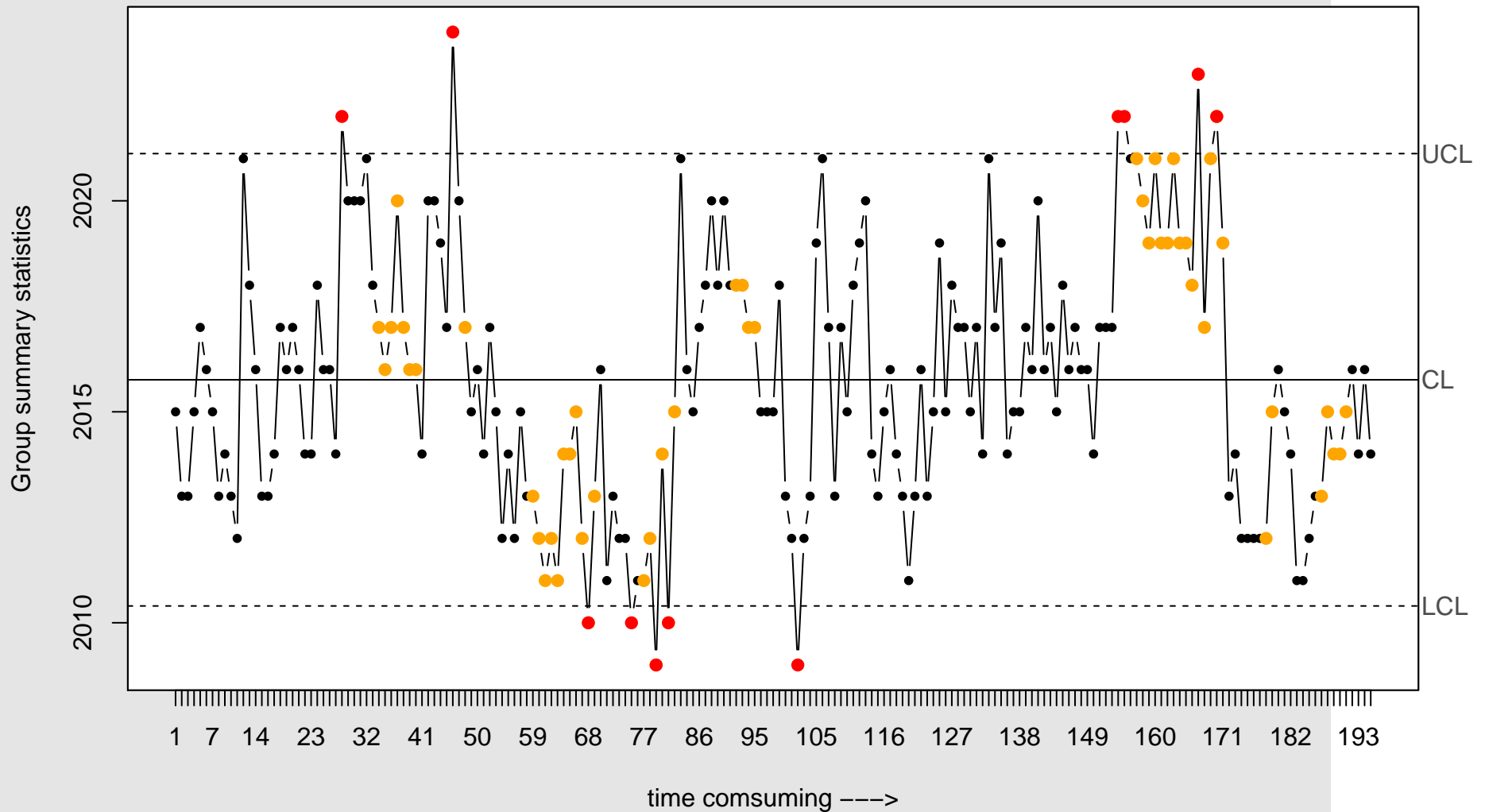


Number of groups = 195  
 Center = 2015.636  
 StdDev = 1.873583

LCL = 2010.015  
 UCL = 2021.257

Number beyond limits = 17  
 Number violating runs = 53

## 227th column point of this product



Number of groups = 195

Center = 2015.759

StdDev = 1.786759

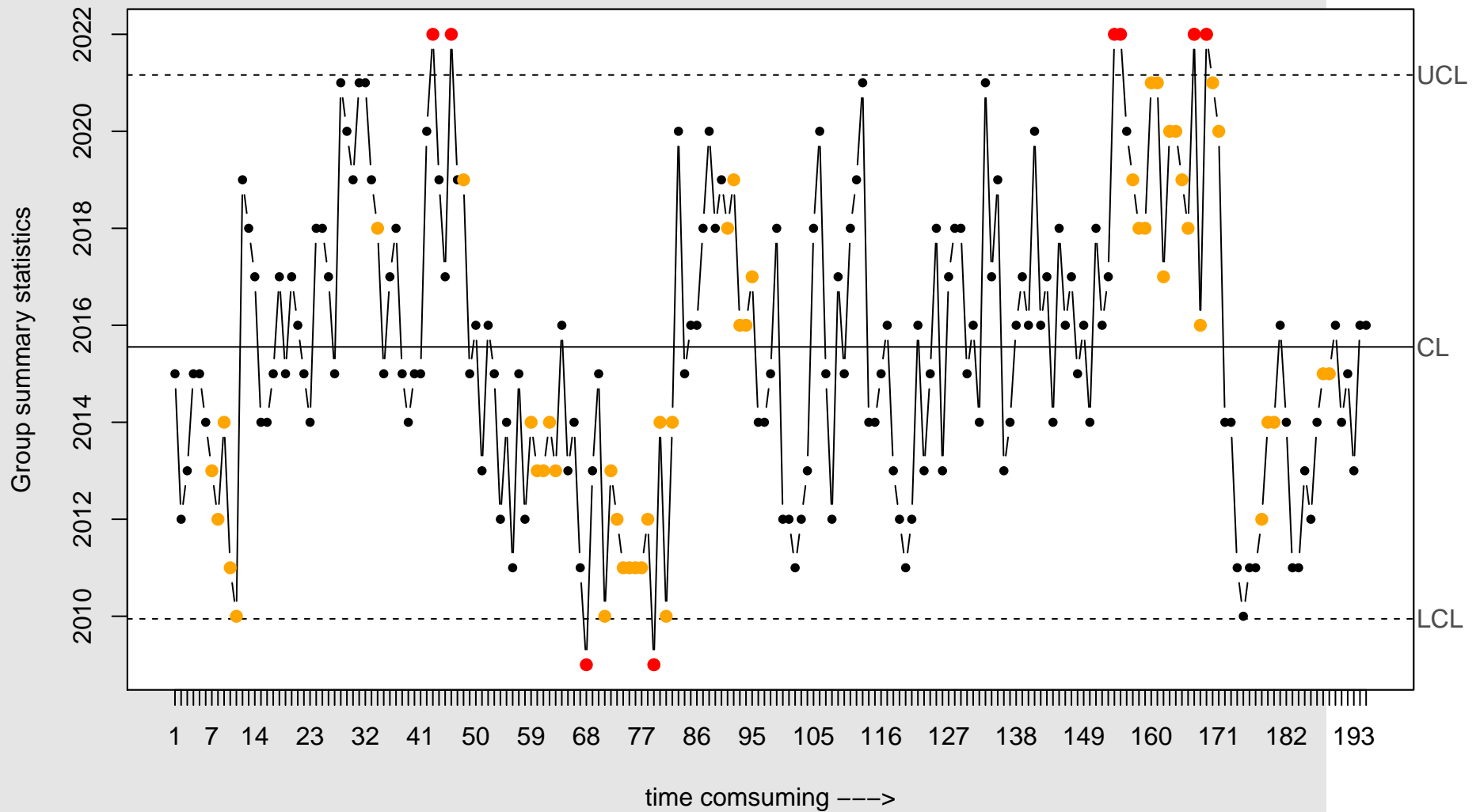
LCL = 2010.399

UCL = 2021.119

Number beyond limits = 11

Number violating runs = 51

## 228th column point of this product



Number of groups = 195

Center = 2015.554

StdDev = 1.869014

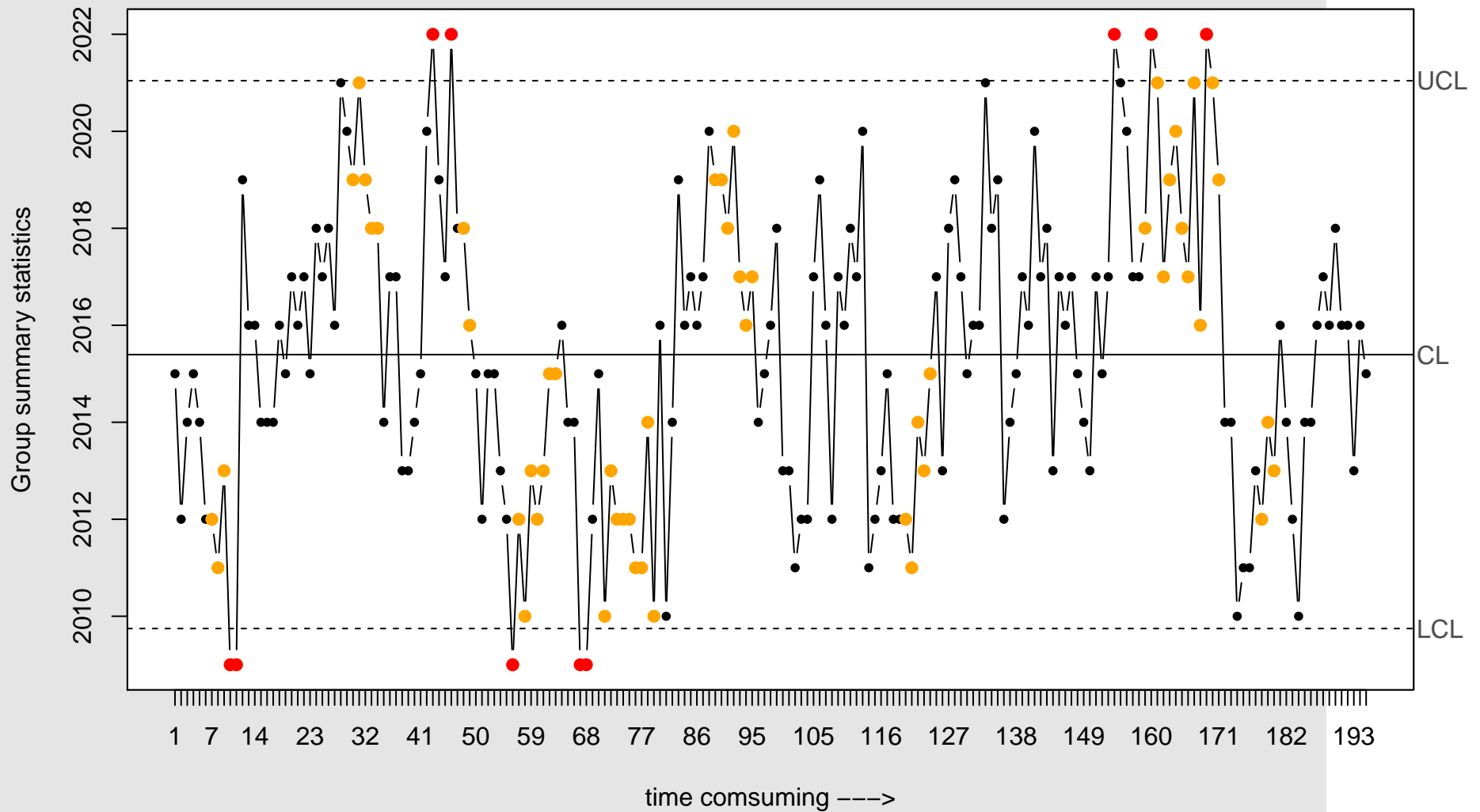
LCL = 2009.947

UCL = 2021.161

Number beyond limits = 8

Number violating runs = 49

## 229th column point of this product



Number of groups = 195

Center = 2015.395

StdDev = 1.882723

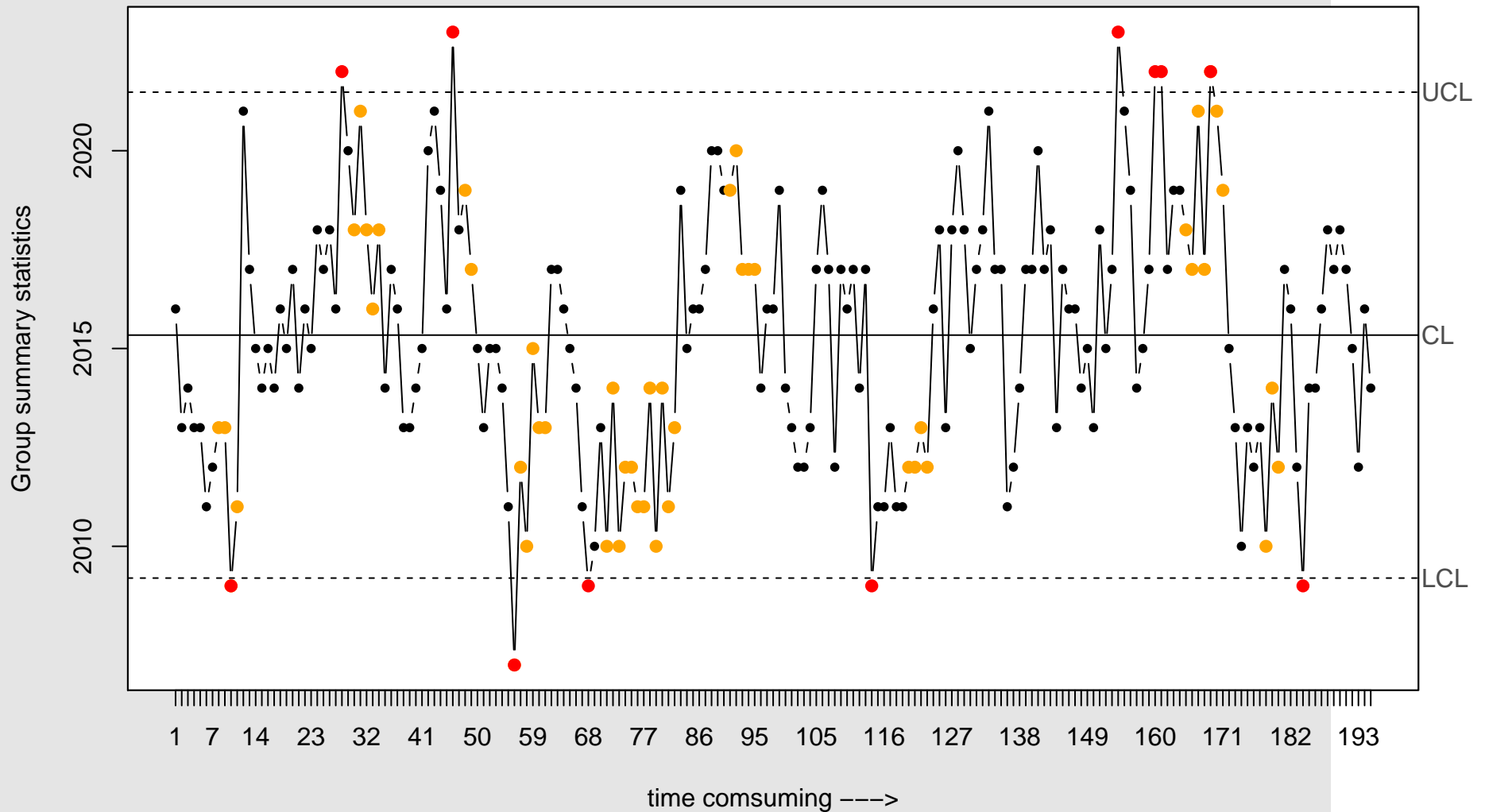
LCL = 2009.747

UCL = 2021.043

Number beyond limits = 10

Number violating runs = 57

## 230th column point of this product



Number of groups = 195

Center = 2015.338

StdDev = 2.047233

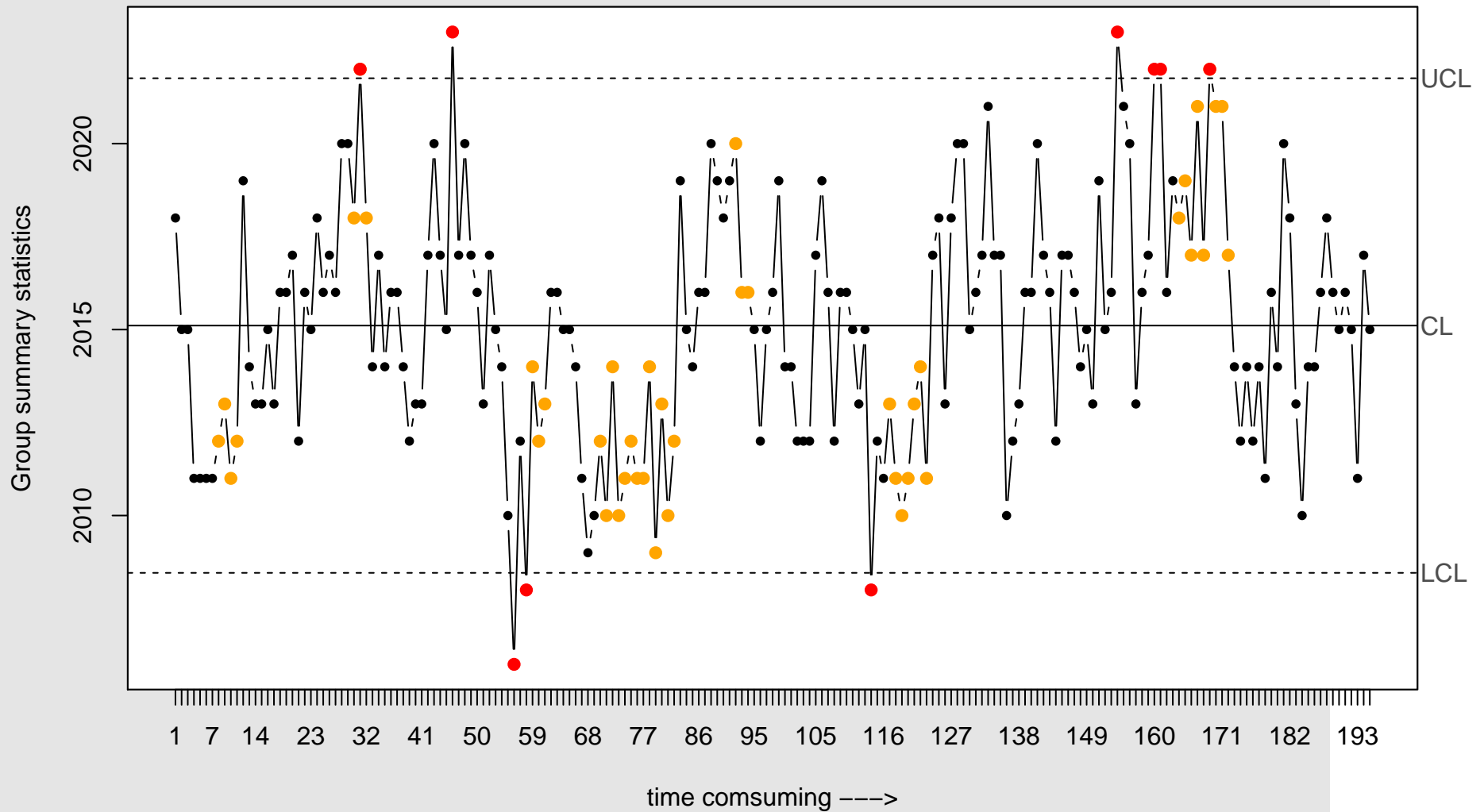
LCL = 2009.197

UCL = 2021.48

Number beyond limits = 11

Number violating runs = 48

## 231th column point of this product

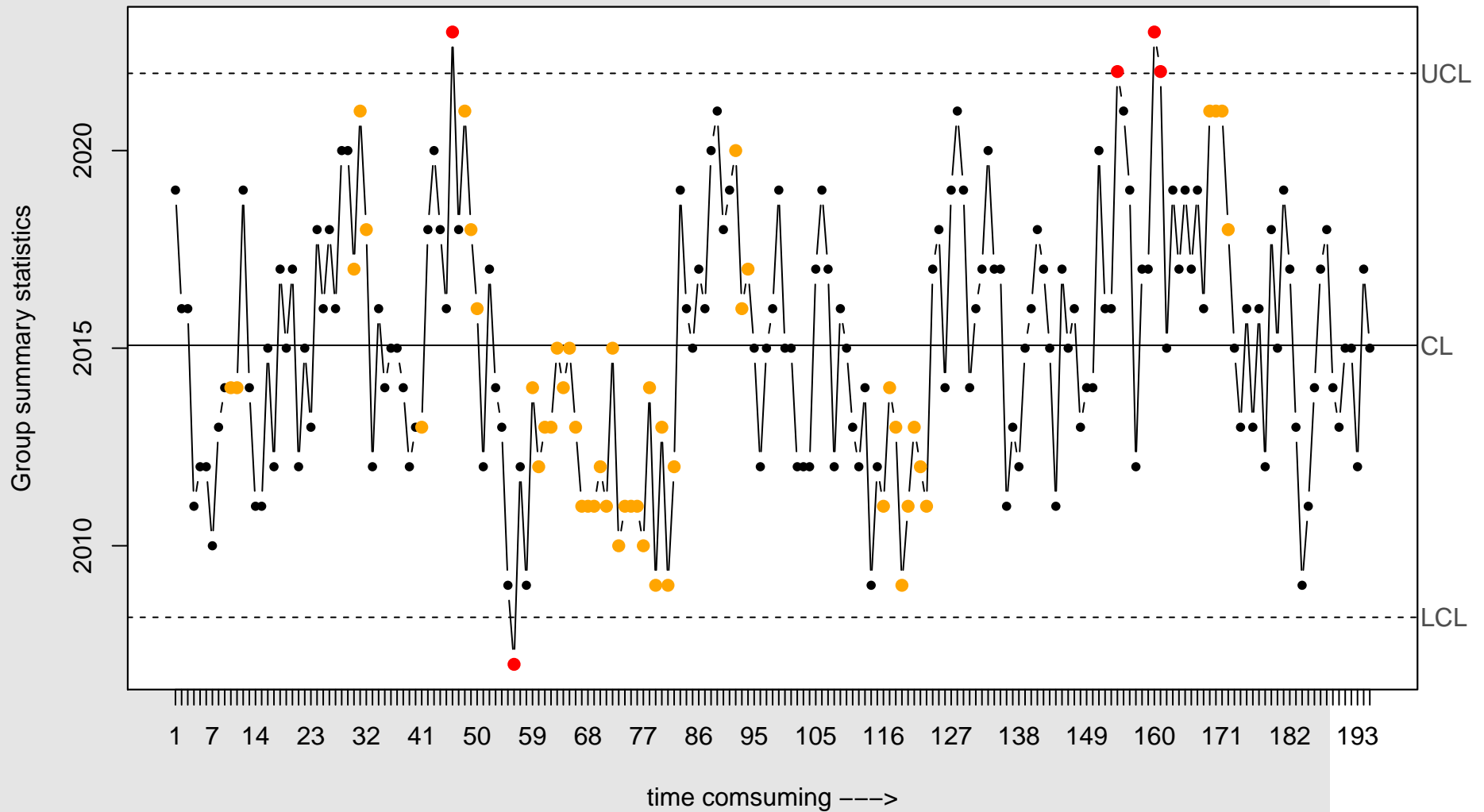


Number of groups = 195  
 Center = 2015.108  
 StdDev = 2.216312

LCL = 2008.459  
 UCL = 2021.757

Number beyond limits = 9  
 Number violating runs = 42

## 232th column point of this product

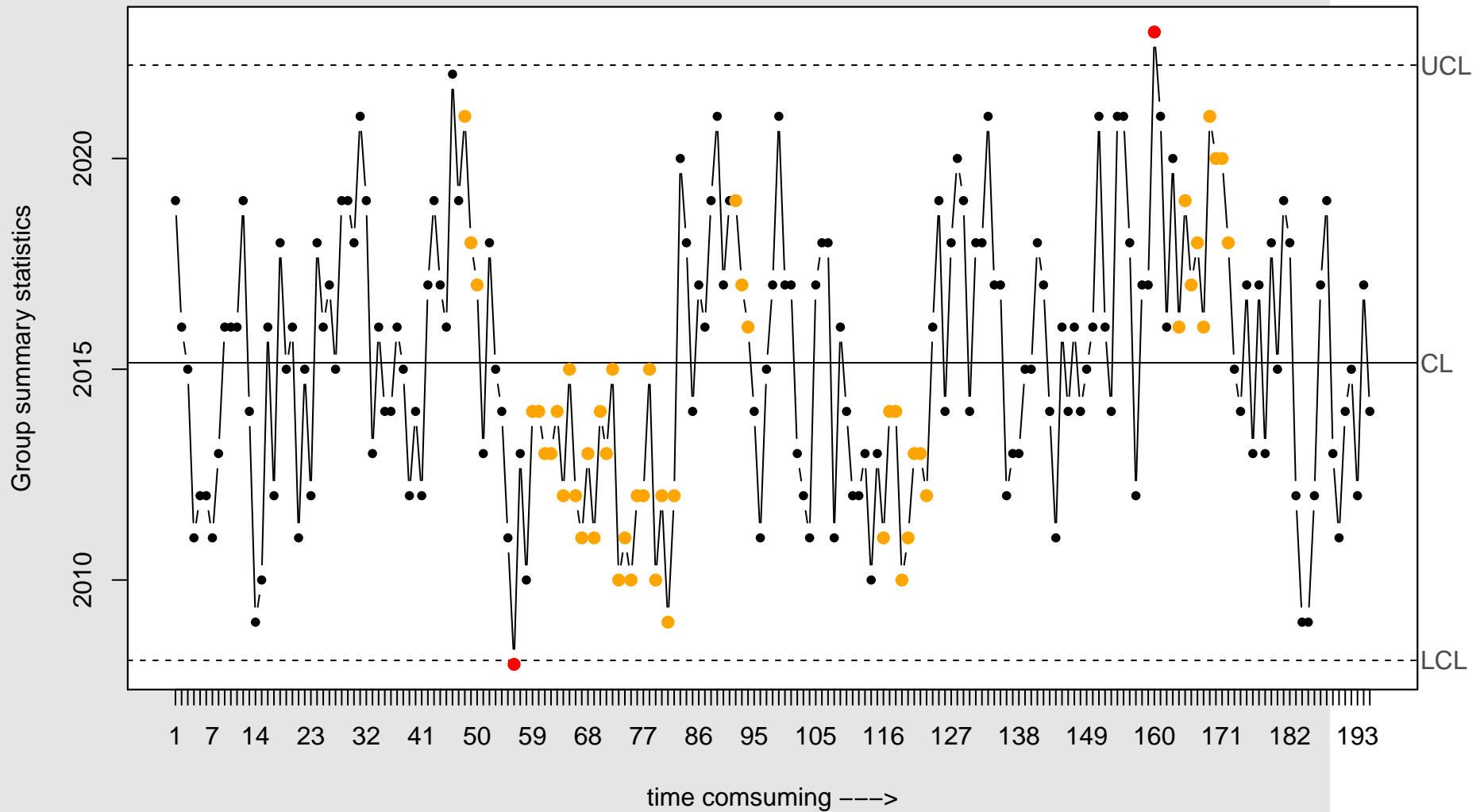


Number of groups = 195  
Center = 2015.072  
StdDev = 2.293997

LCL = 2008.19  
UCL = 2021.954

Number beyond limits = 5  
Number violating runs = 48

## 233th column point of this product



Number of groups = 195

Center = 2015.154

StdDev = 2.353404

LCL = 2008.094

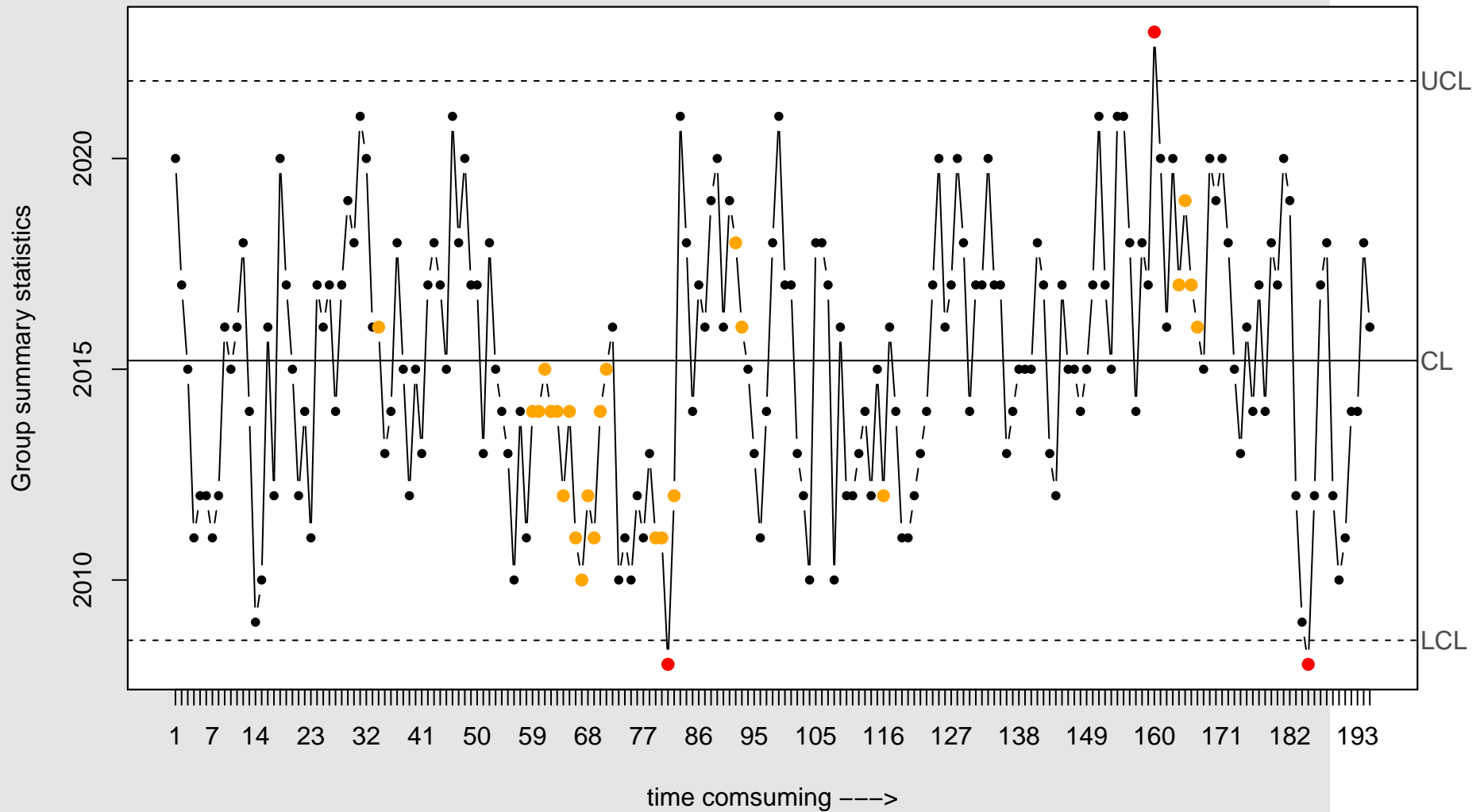
UCL = 2022.214

Number beyond limits = 2

Number violating runs = 47



## 234th column point of this product



Number of groups = 195

Center = 2015.205

StdDev = 2.211742

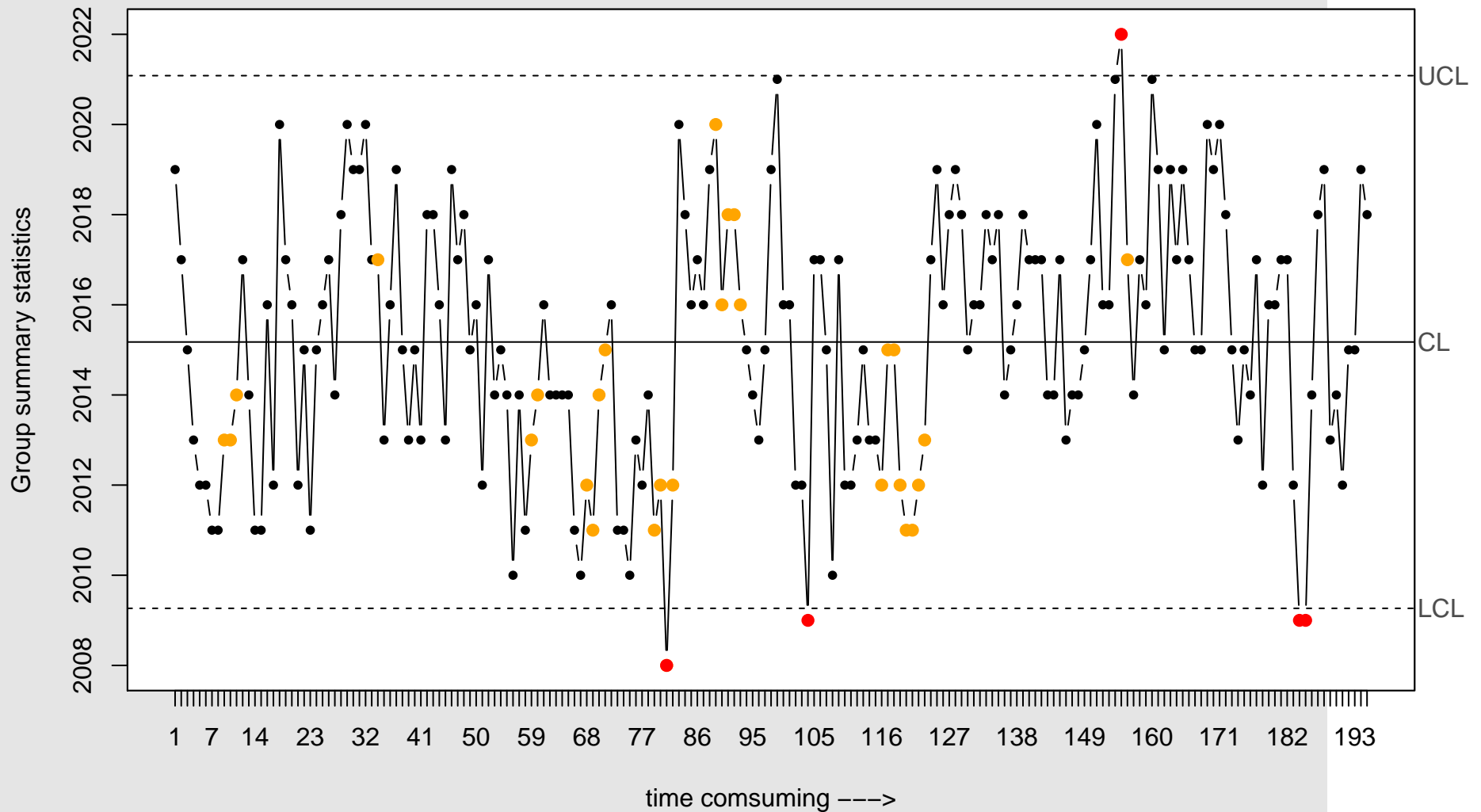
LCL = 2008.57

UCL = 2021.84

Number beyond limits = 3

Number violating runs = 25

## 235th column point of this product



Number of groups = 195

Center = 2015.174

StdDev = 1.969547

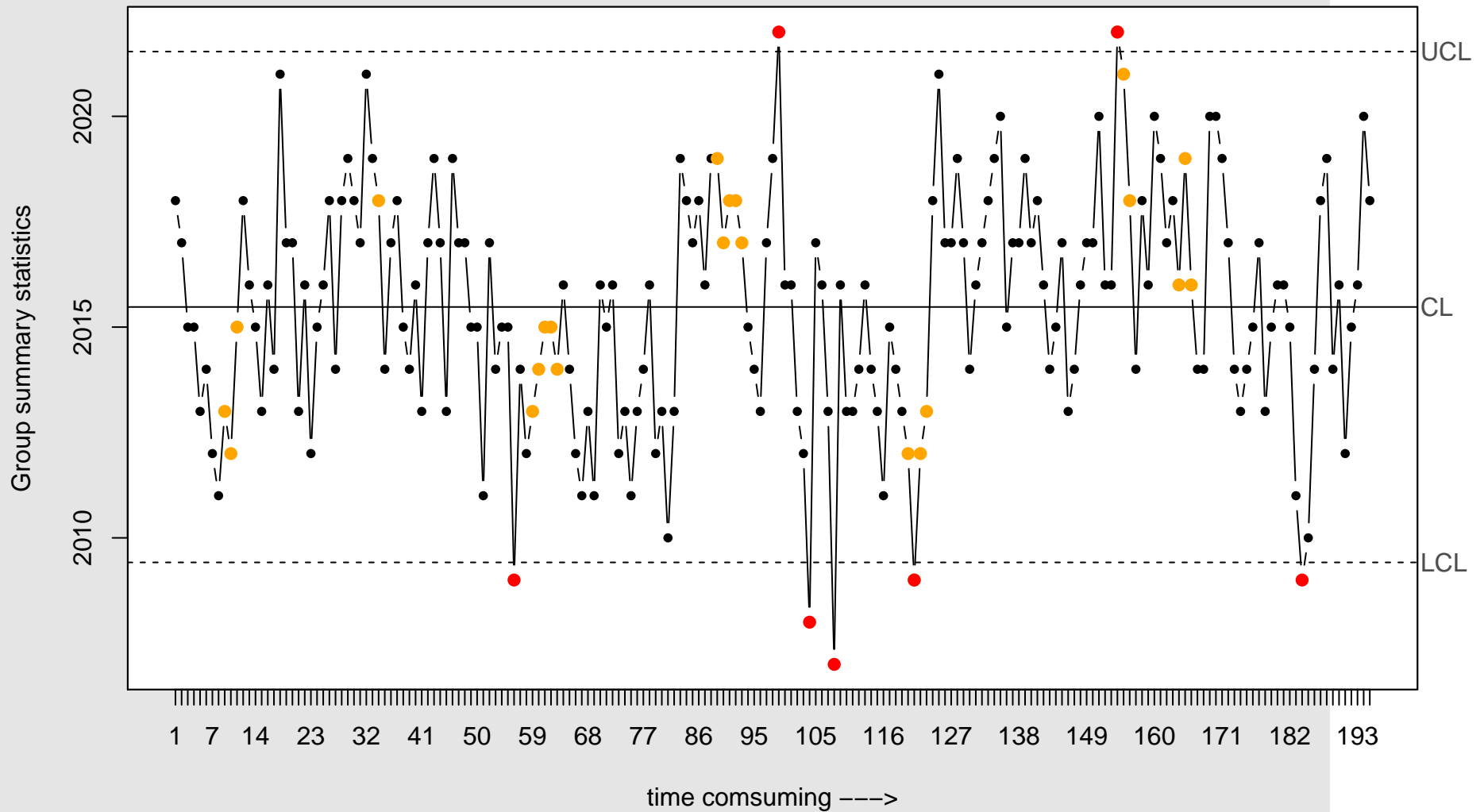
LCL = 2009.266

UCL = 2021.083

Number beyond limits = 5

Number violating runs = 28

## 236th column point of this product



Number of groups = 195

Center = 2015.477

StdDev = 2.019814

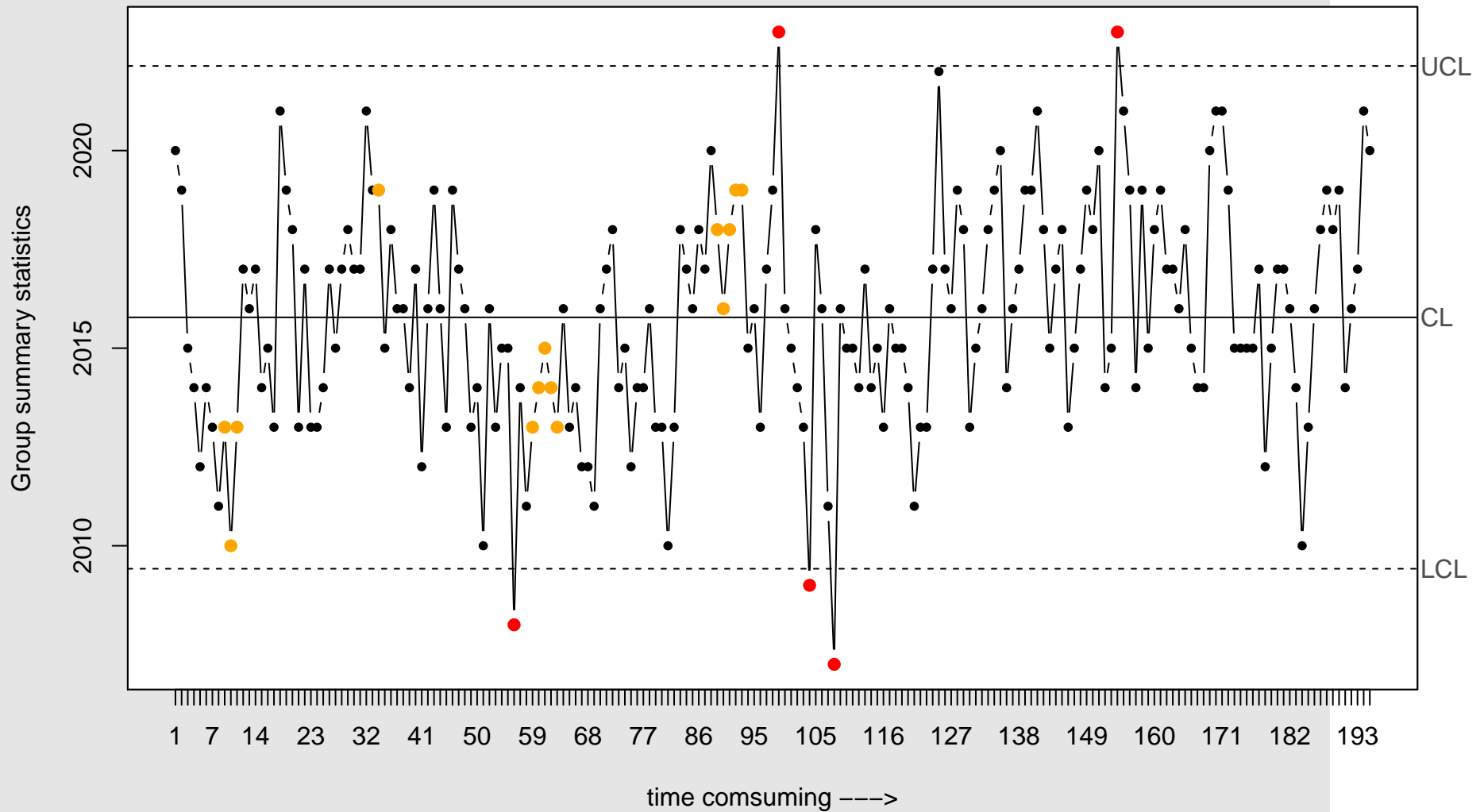
LCL = 2009.417

UCL = 2021.536

Number beyond limits = 7

Number violating runs = 24

## 237th column point of this product



Number of groups = 195

Center = 2015.779

StdDev = 2.120348

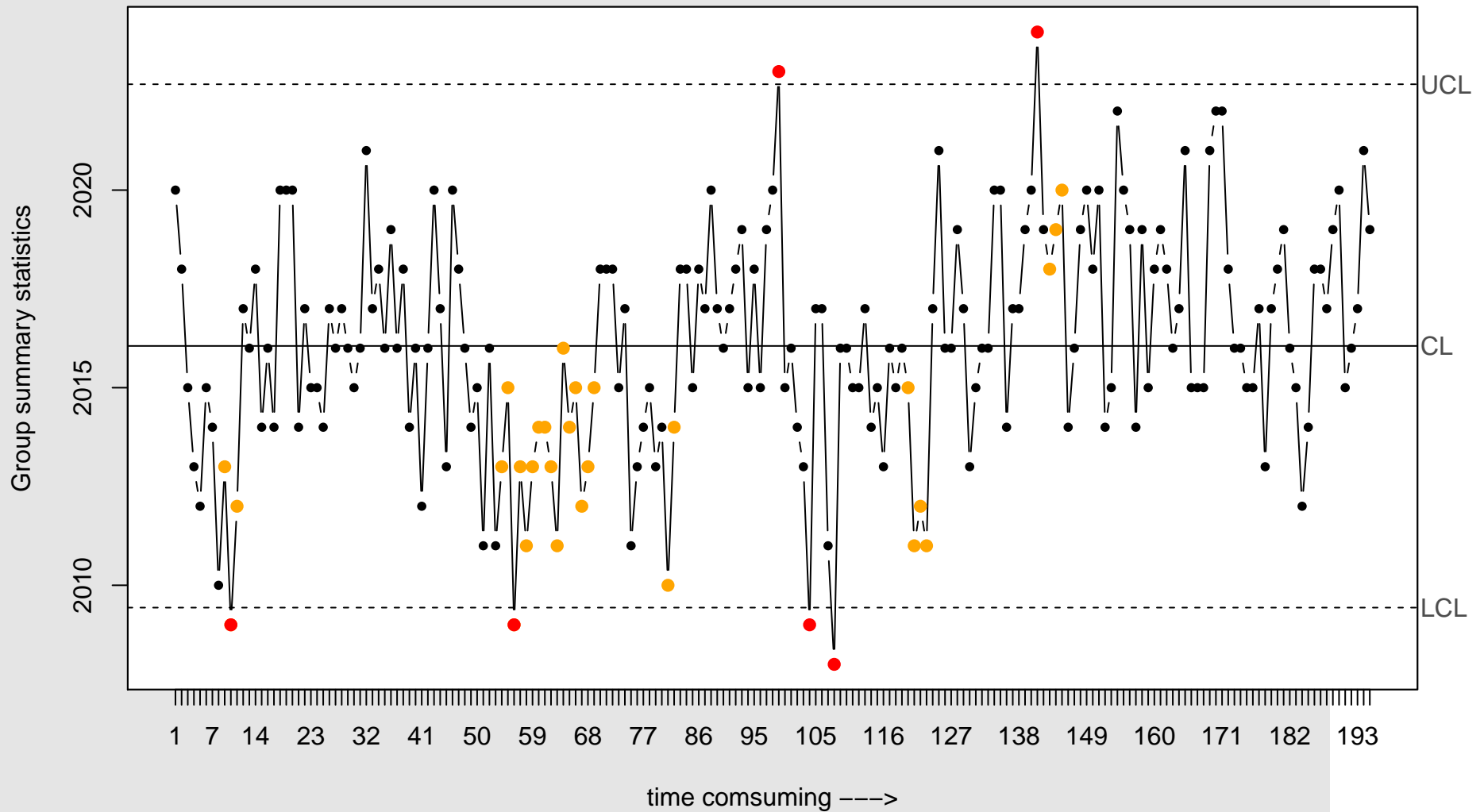
LCL = 2009.418

UCL = 2022.141

Number beyond limits = 5

Number violating runs = 14

## 238th column point of this product



Number of groups = 195

Center = 2016.056

StdDev = 2.207173

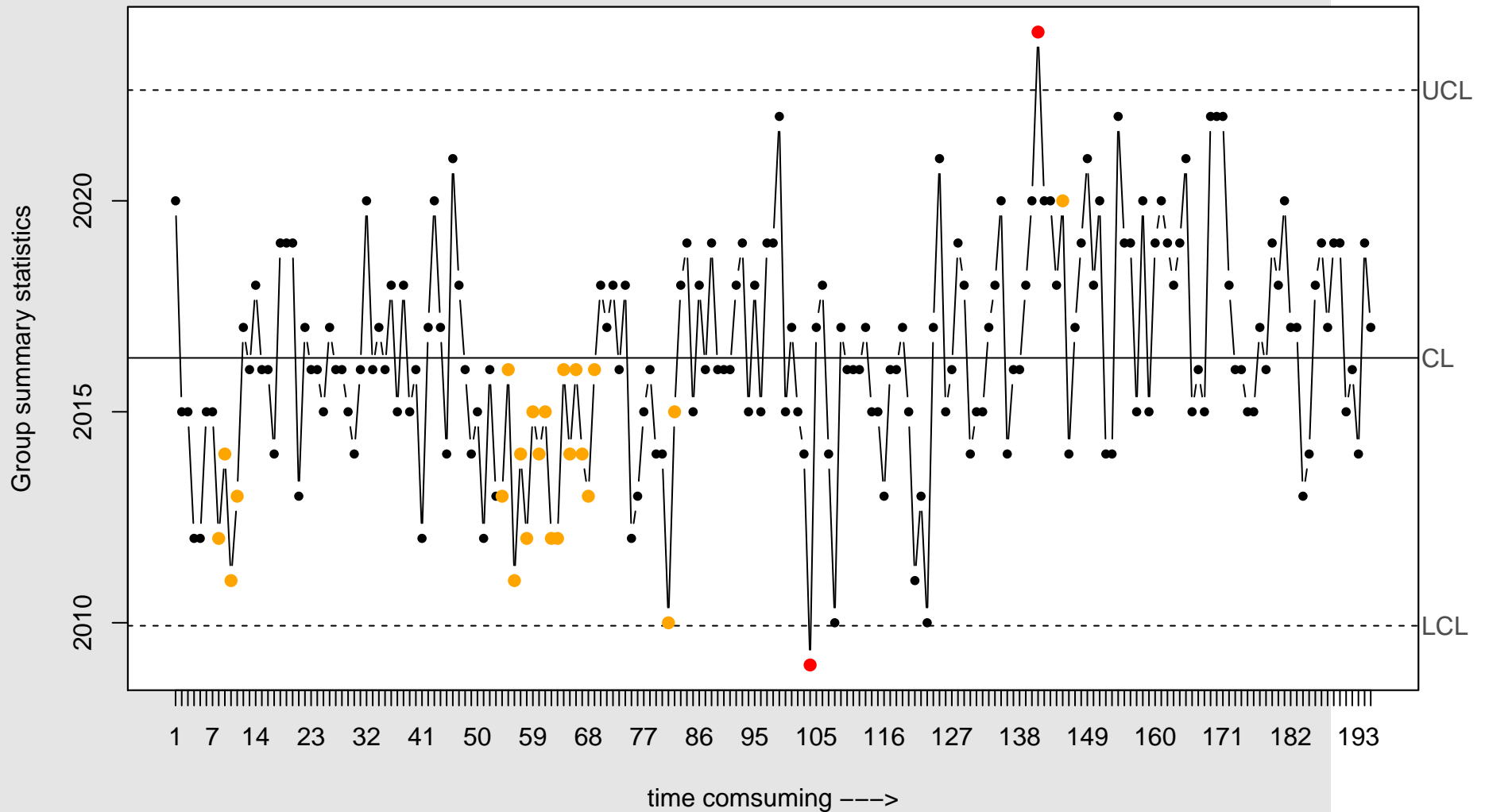
LCL = 2009.435

UCL = 2022.678

Number beyond limits = 6

Number violating runs = 28

## 239th column point of this product

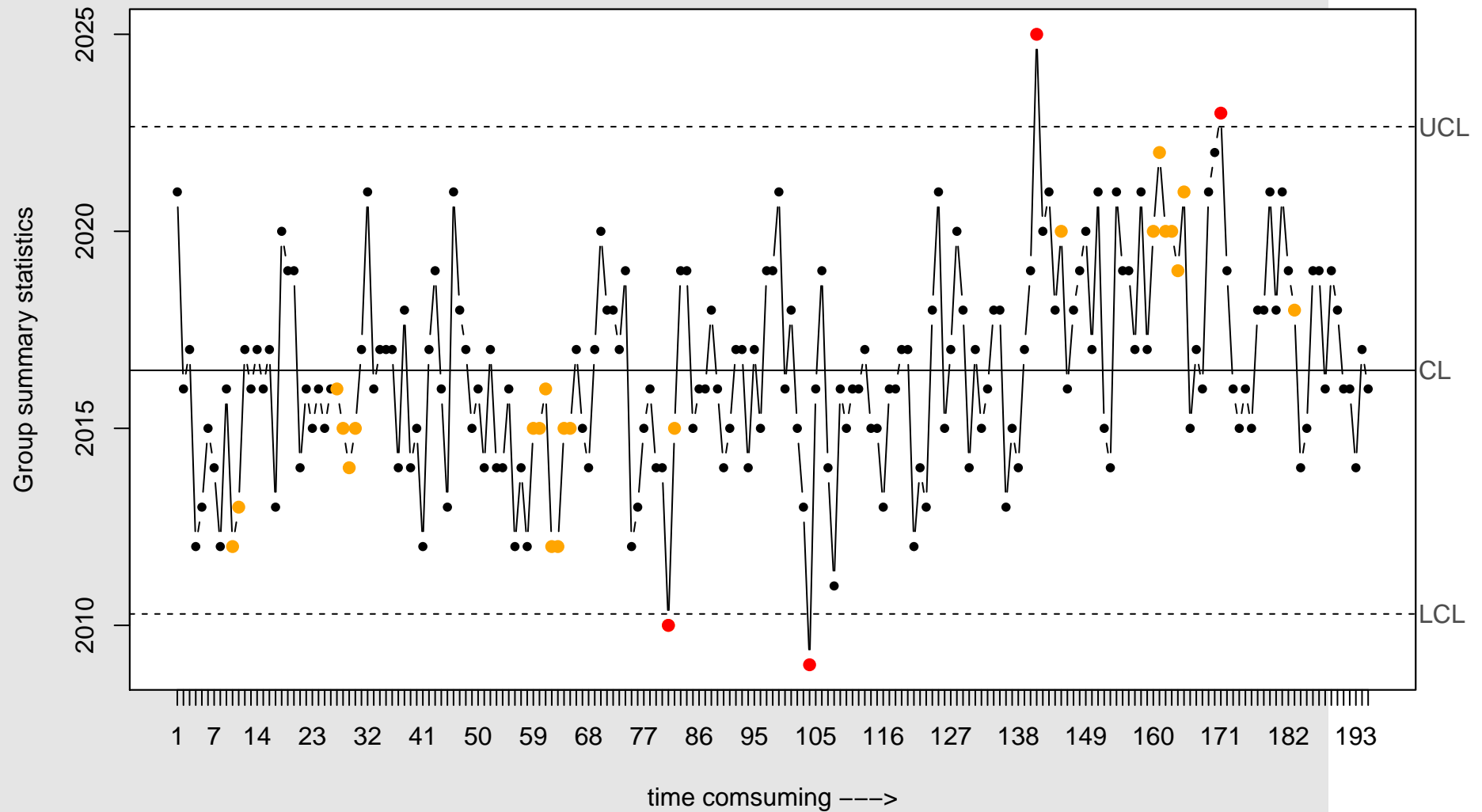


Number of groups = 195  
 Center = 2016.277  
 StdDev = 2.115778

LCL = 2009.93  
 UCL = 2022.624

Number beyond limits = 2  
 Number violating runs = 23

## 240th column point of this product



Number of groups = 195

Center = 2016.472

StdDev = 2.060942

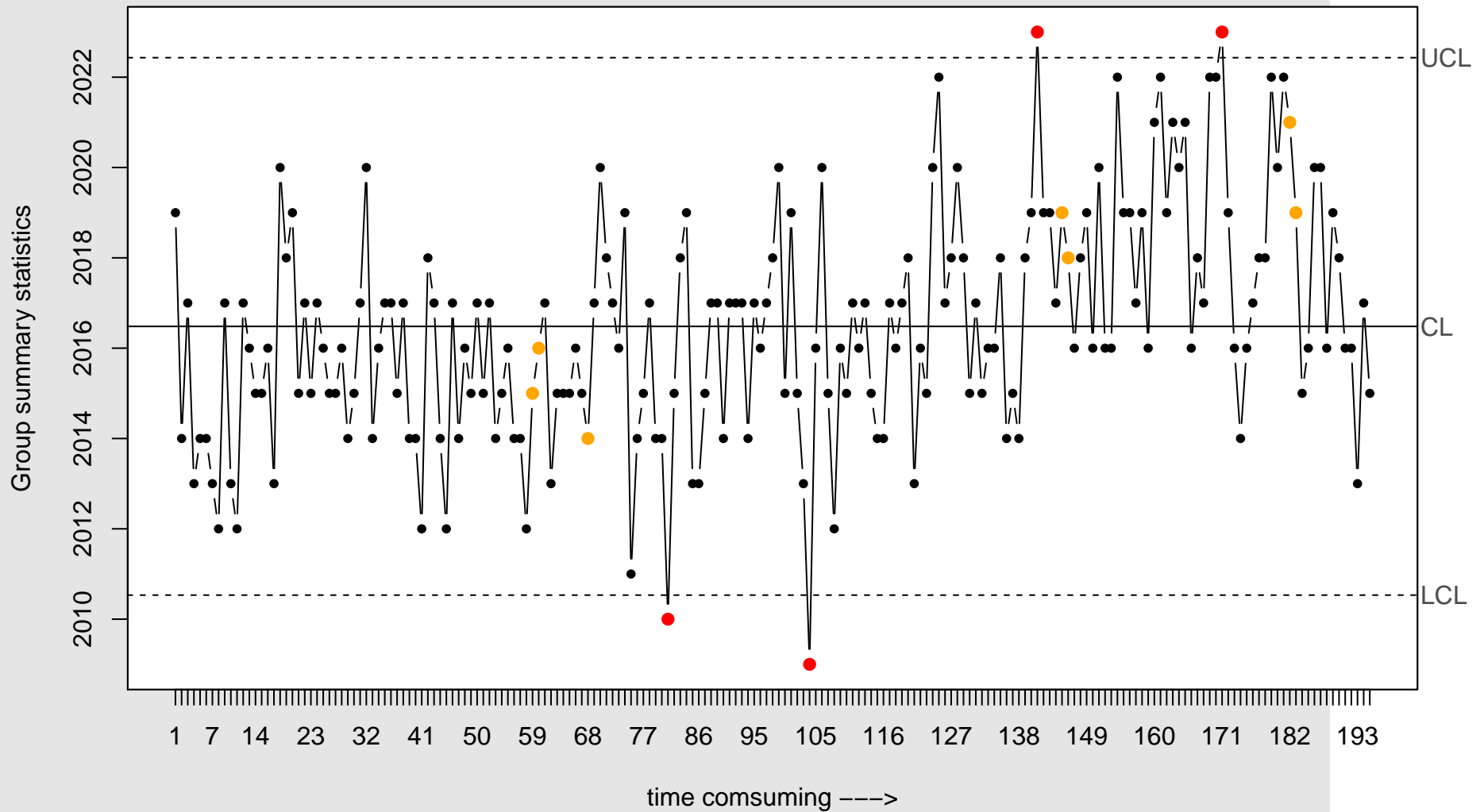
LCL = 2010.289

UCL = 2022.655

Number beyond limits = 4

Number violating runs = 23

## 241th column point of this product



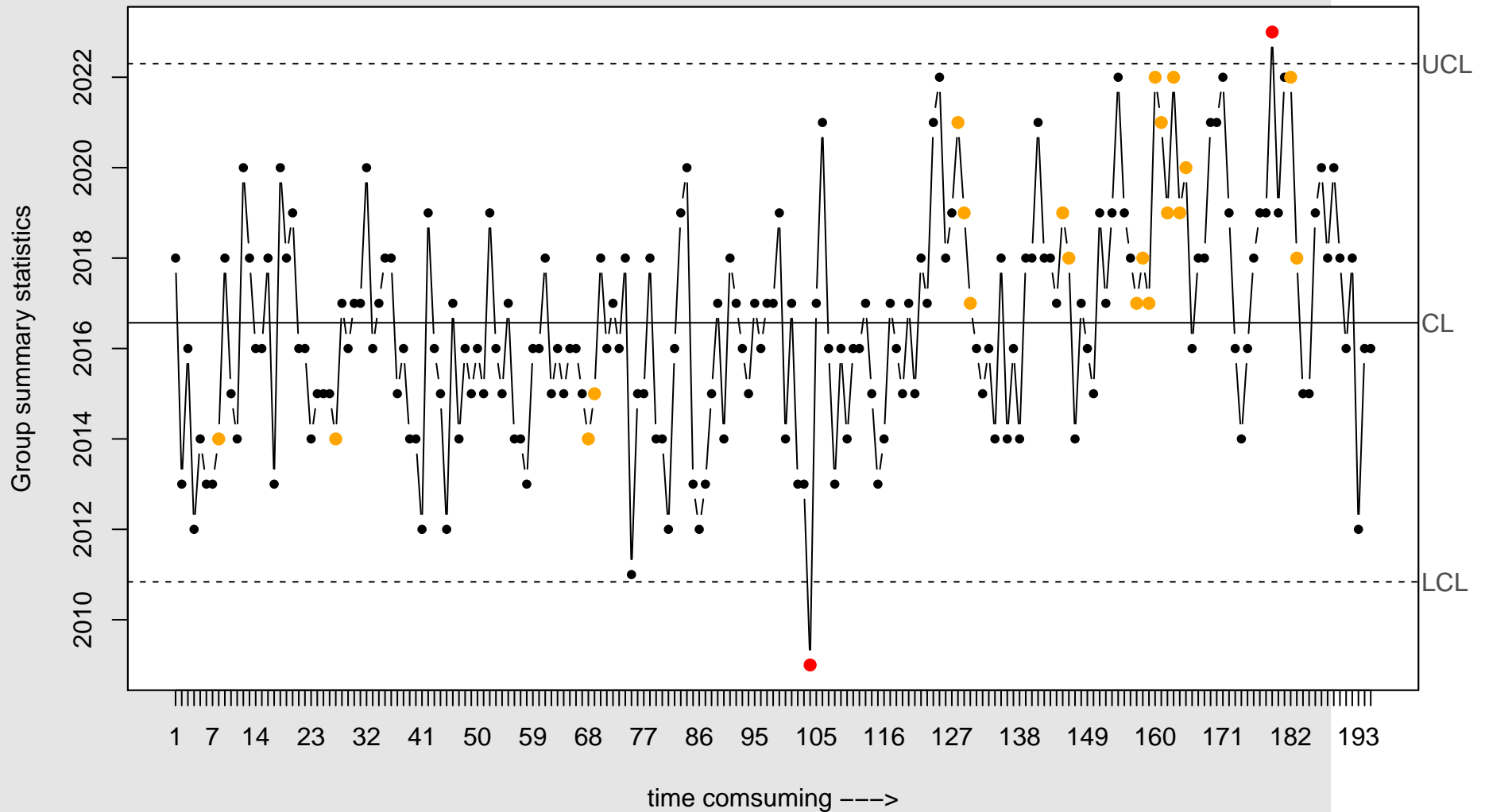
Number of groups = 195  
Center = 2016.482  
StdDev = 1.983257

LCL = 2010.532  
UCL = 2022.432

Number beyond limits = 4  
Number violating runs = 7



## 242th column point of this product



Number of groups = 195

Center = 2016.569

StdDev = 1.910141

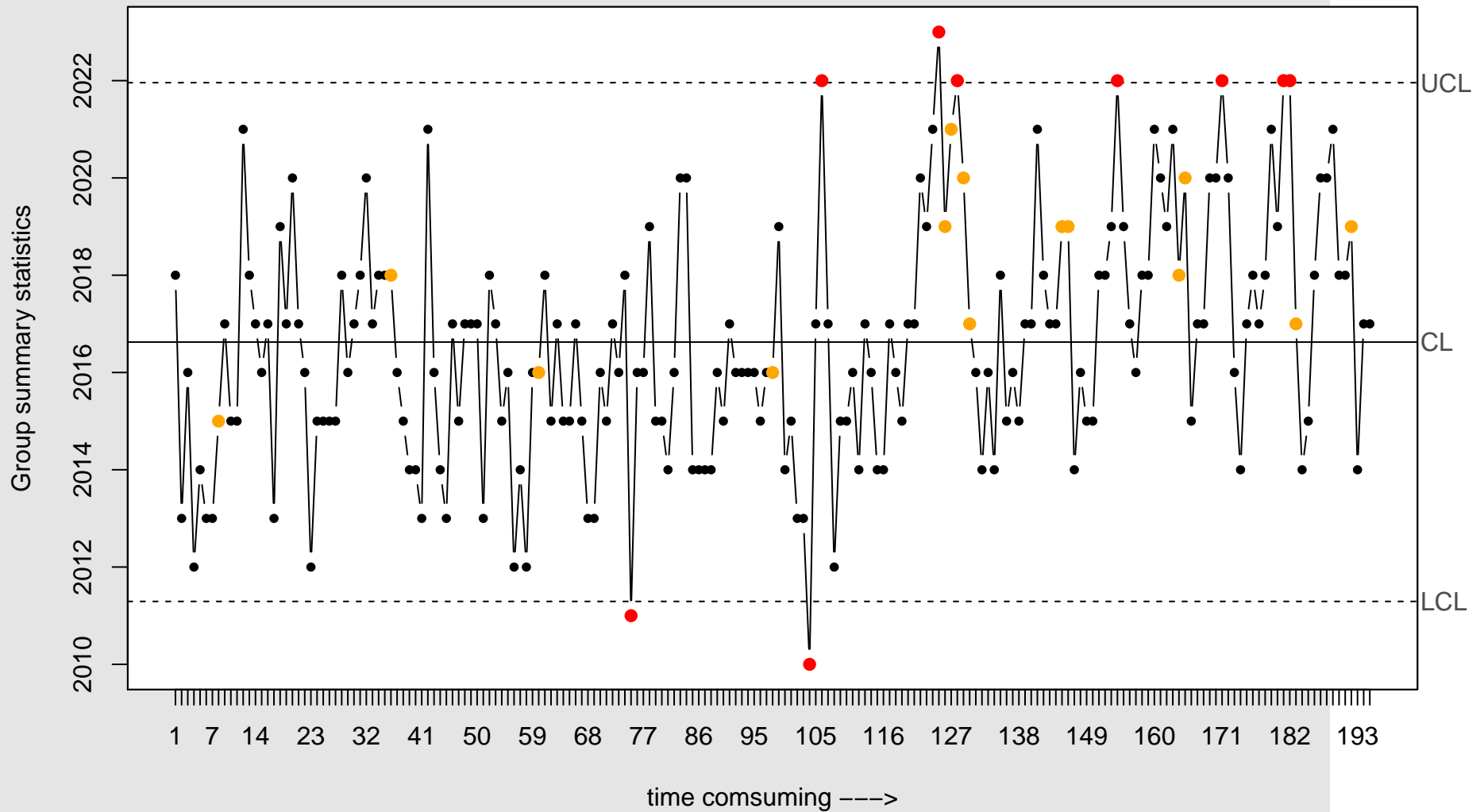
LCL = 2010.839

UCL = 2022.3

Number beyond limits = 2

Number violating runs = 20

## 243th column point of this product



Number of groups = 195

Center = 2016.626

StdDev = 1.777619

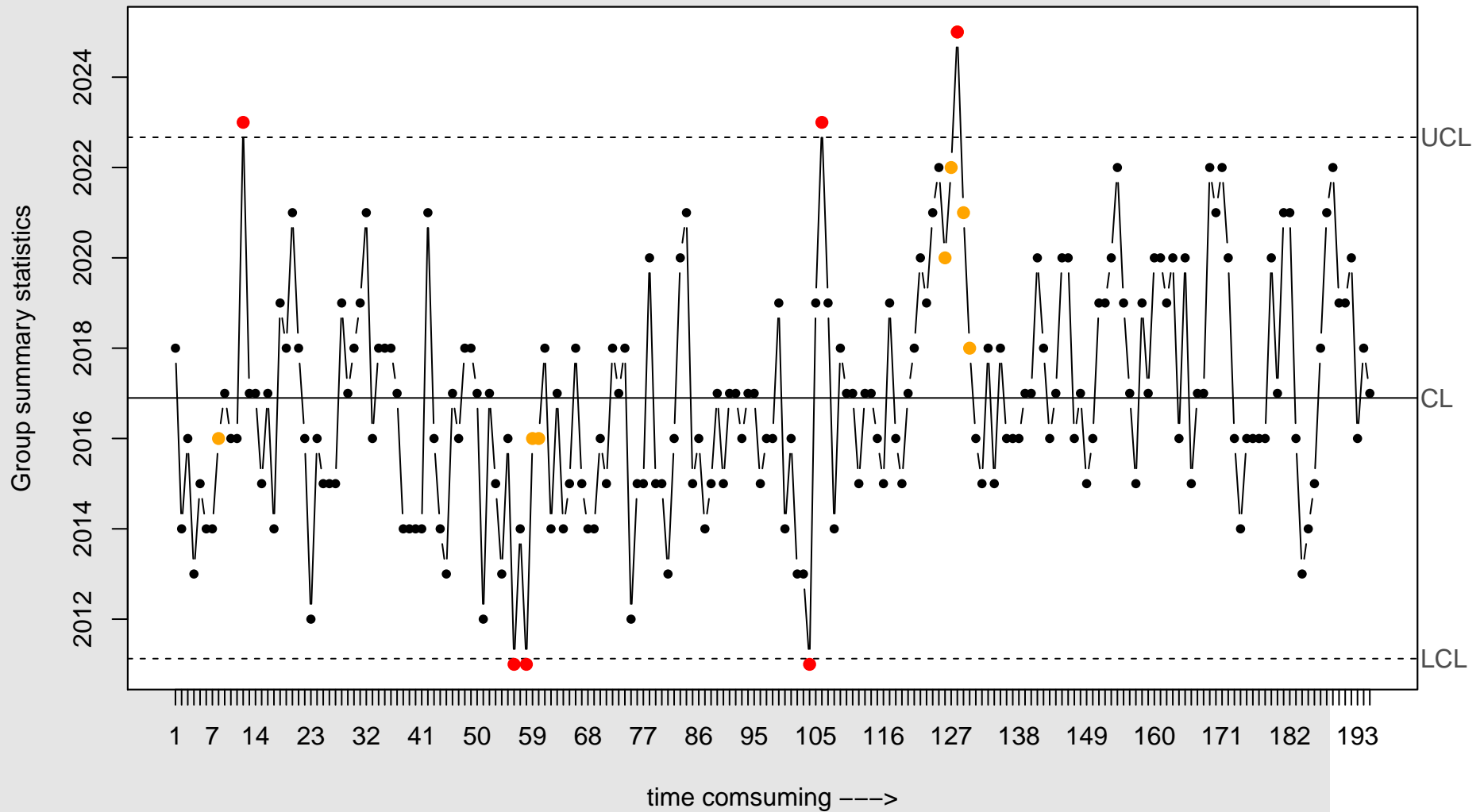
LCL = 2011.293

UCL = 2021.958

Number beyond limits = 9

Number violating runs = 17

## 244th column point of this product



Number of groups = 195

Center = 2016.897

StdDev = 1.92385

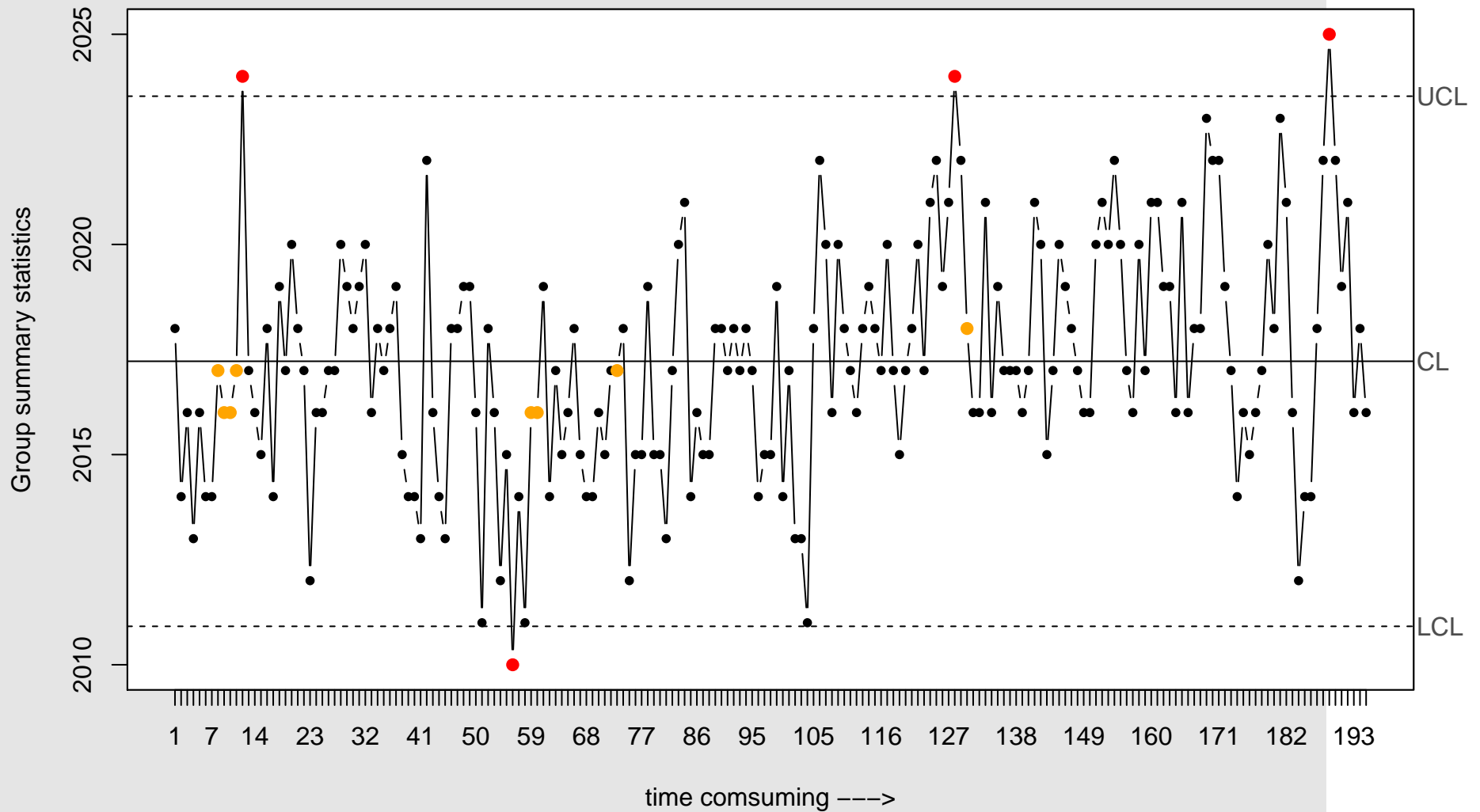
LCL = 2011.126

UCL = 2022.669

Number beyond limits = 6

Number violating runs = 8

## 245th column point of this product

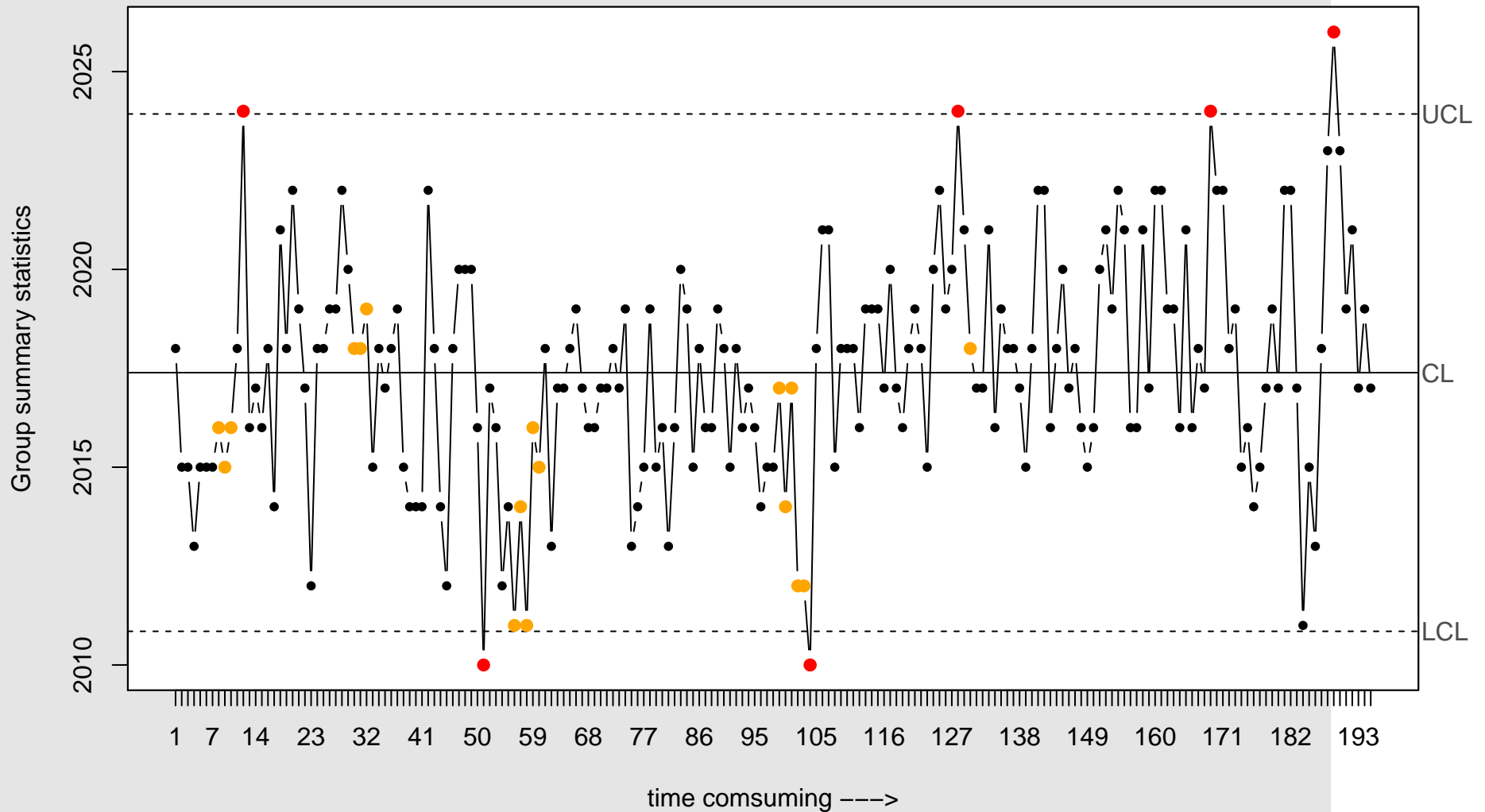


Number of groups = 195  
 Center = 17.221  
 StdDev = 2.102069

LCL = 10.914  
 UCL = 23.527

Number beyond limits = 4  
 Number violating runs = 8

## 246th column point of this product



Number of groups = 195

Center = 2017.39

StdDev = 2.179754

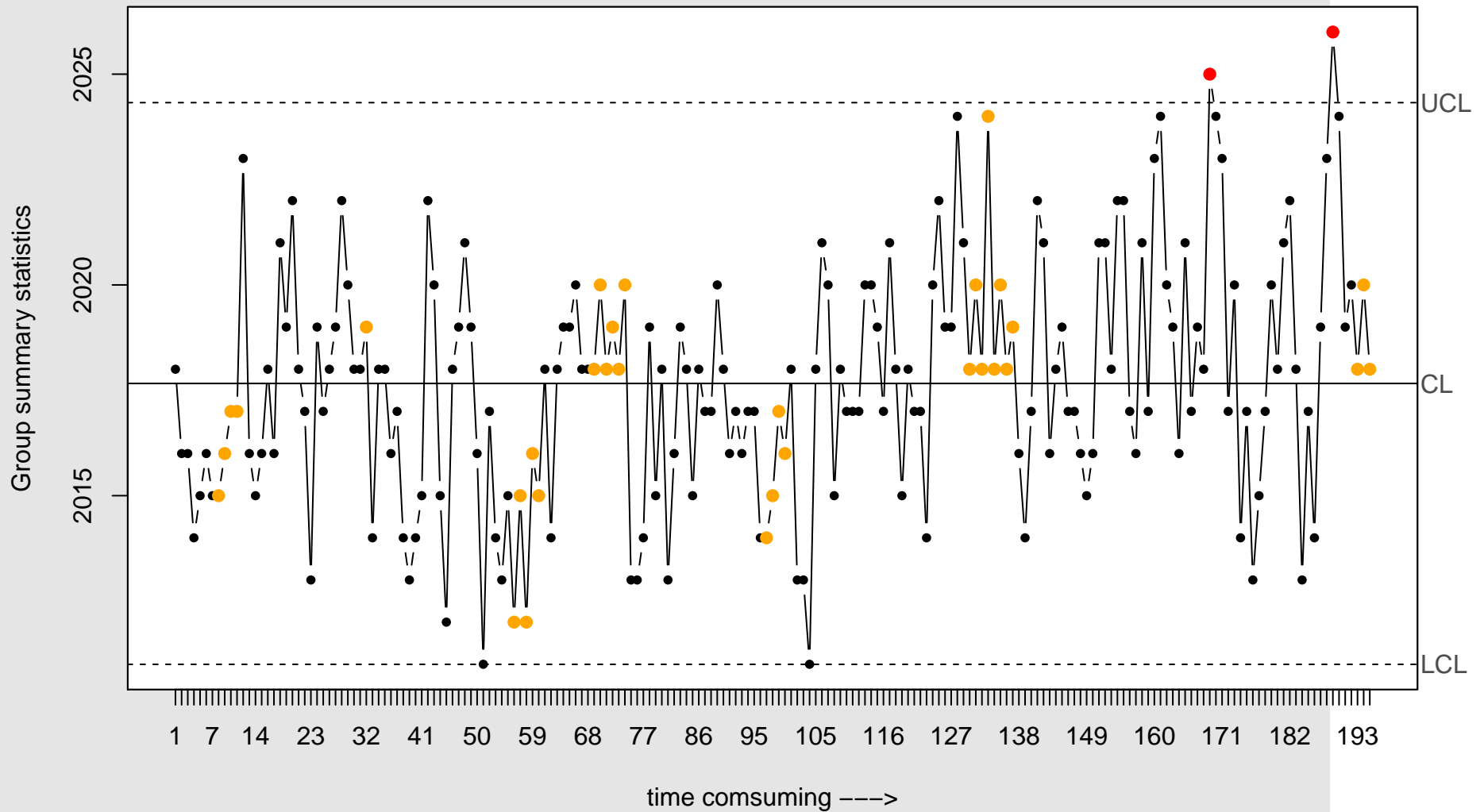
LCL = 2010.85

UCL = 2023.929

Number beyond limits = 6

Number violating runs = 18

## 247th column point of this product



Number of groups = 195

Center = 2017.662

StdDev = 2.220882

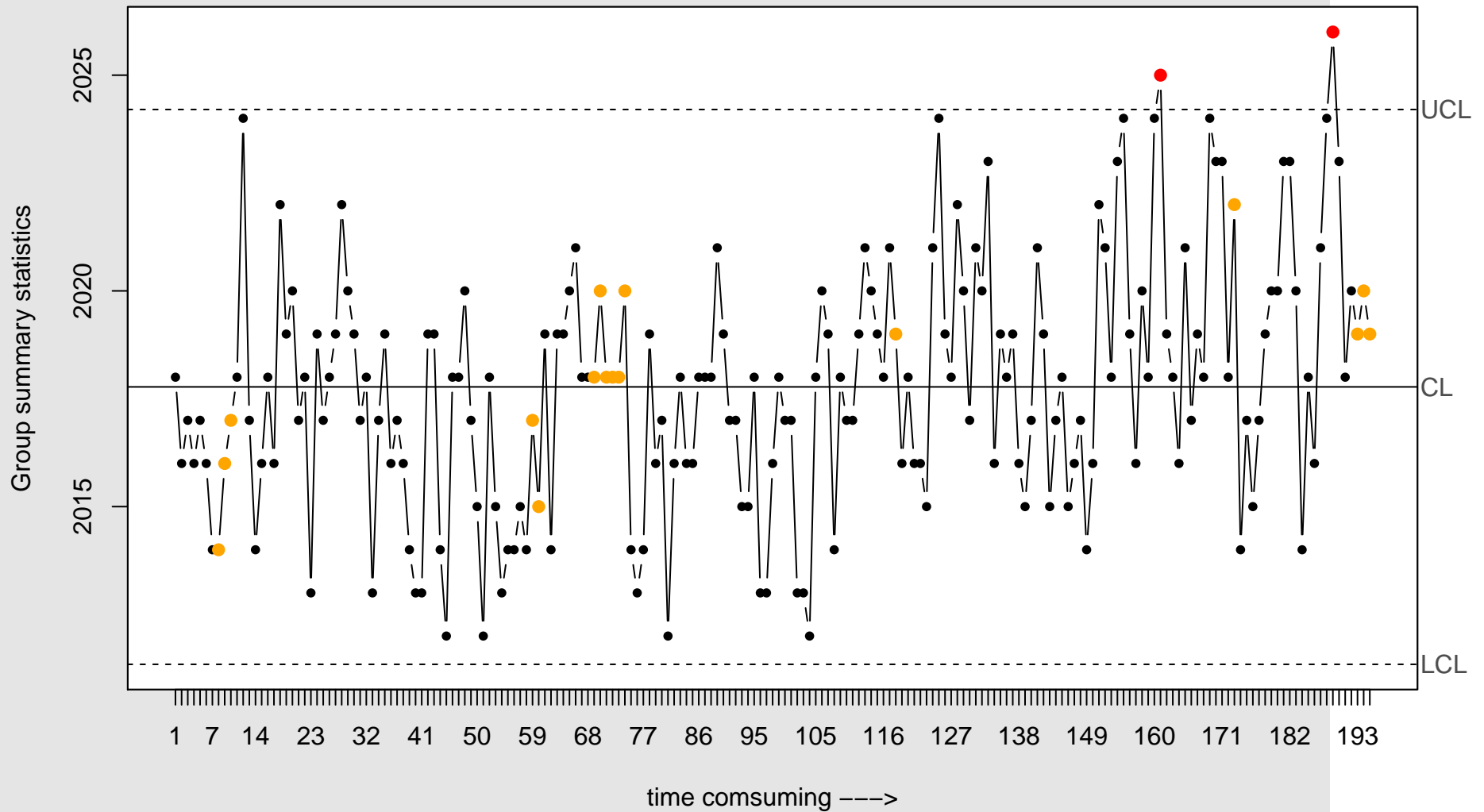
LCL = 2010.999

UCL = 2024.324

Number beyond limits = 2

Number violating runs = 31

## 248th column point of this product



Number of groups = 195

Center = 2017.774

StdDev = 2.143197

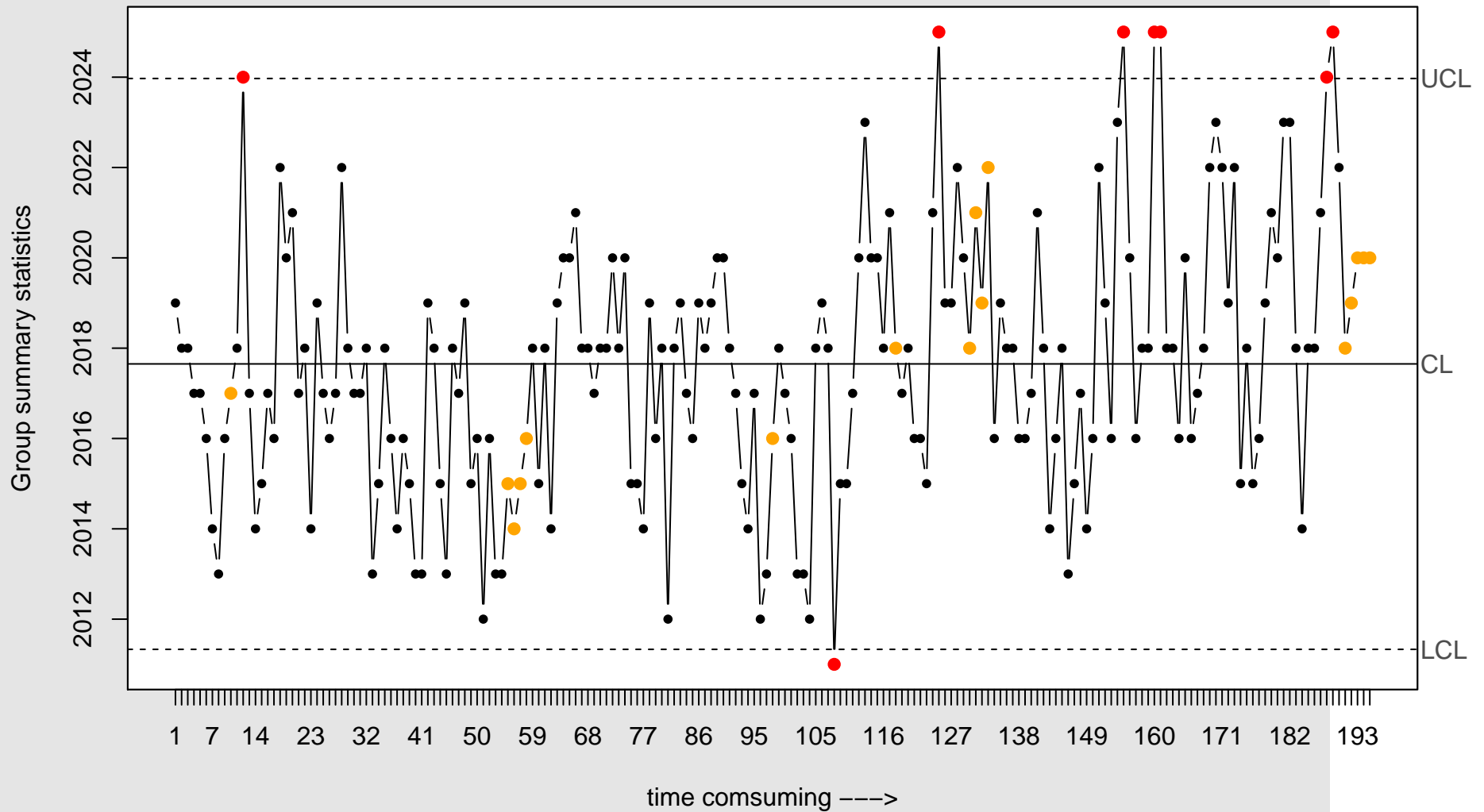
LCL = 2011.345

UCL = 2024.204

Number beyond limits = 2

Number violating runs = 16

## 249th column point of this product



Number of groups = 195

Center = 2017.651

StdDev = 2.106639

LCL = 2011.331

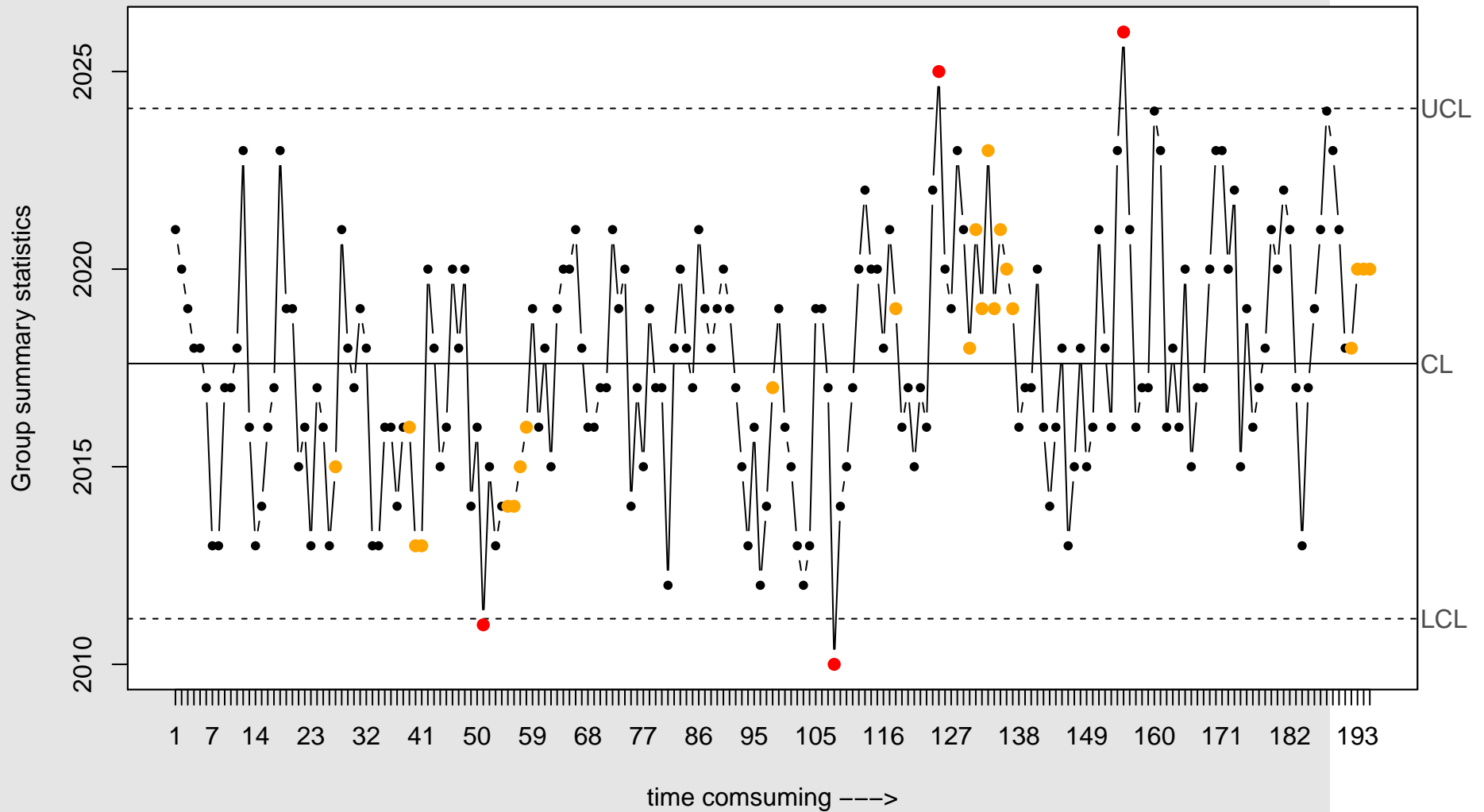
UCL = 2023.971

Number beyond limits = 8

Number violating runs = 16



## 250th column point of this product



Number of groups = 195

Center = 2017.61

StdDev = 2.152336

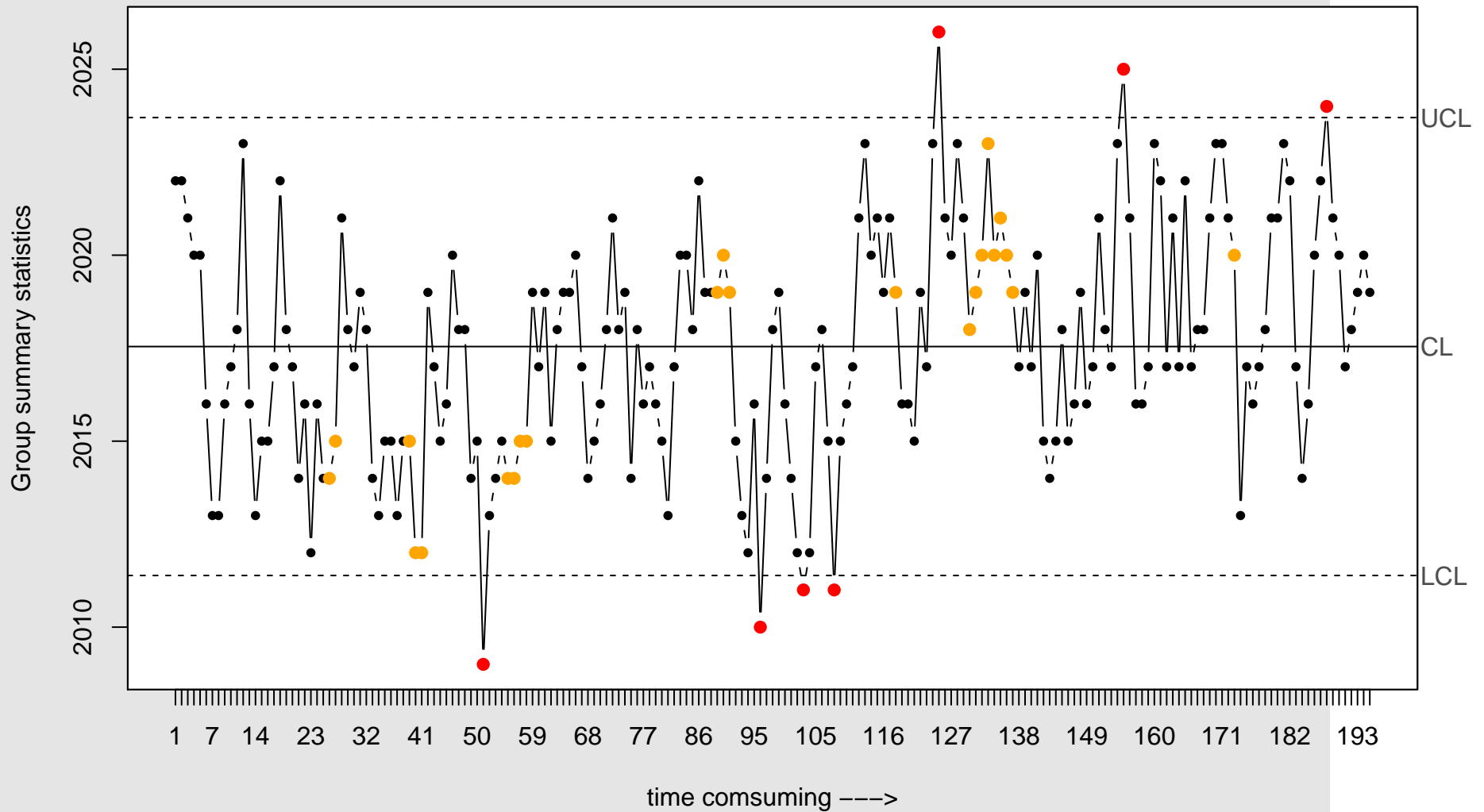
LCL = 2011.153

UCL = 2024.067

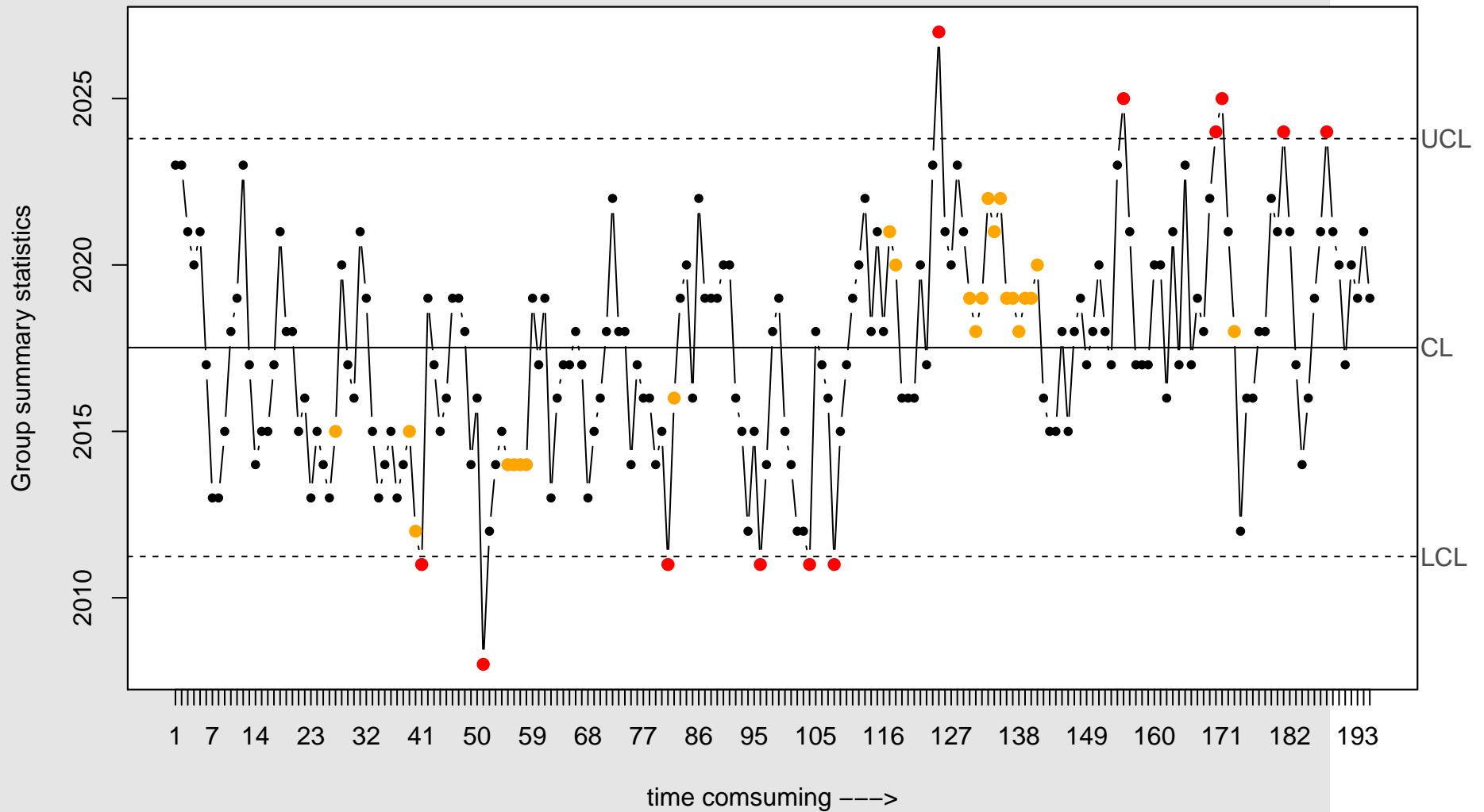
Number beyond limits = 4

Number violating runs = 22

## 251th column point of this product



## 252th column point of this product

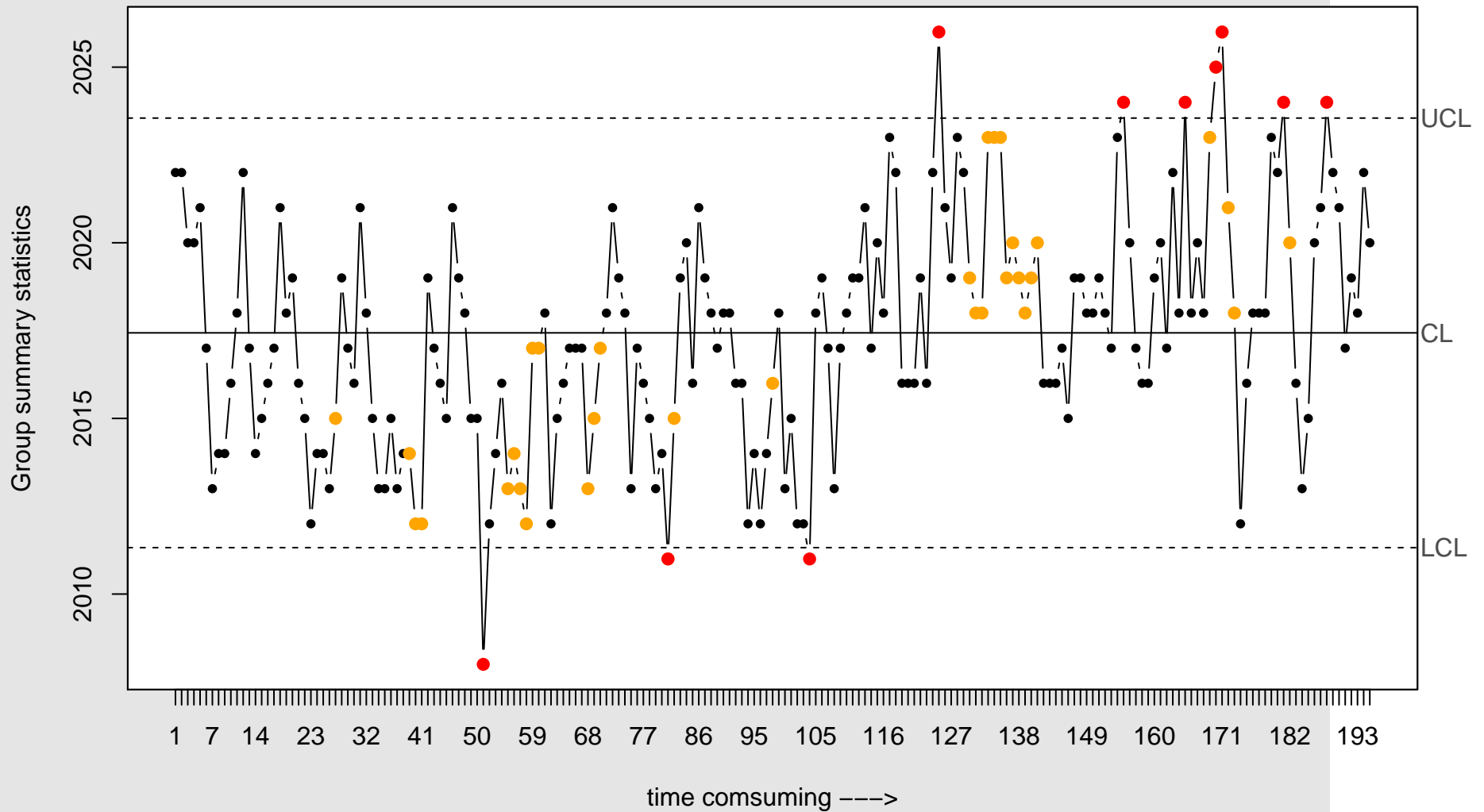


Number of groups = 195  
 Center = 2017.518  
 StdDev = 2.09293

LCL = 2011.239  
 UCL = 2023.797

Number beyond limits = 12  
 Number violating runs = 25

## 253th column point of this product



Number of groups = 195

Center = 2017.436

StdDev = 2.038093

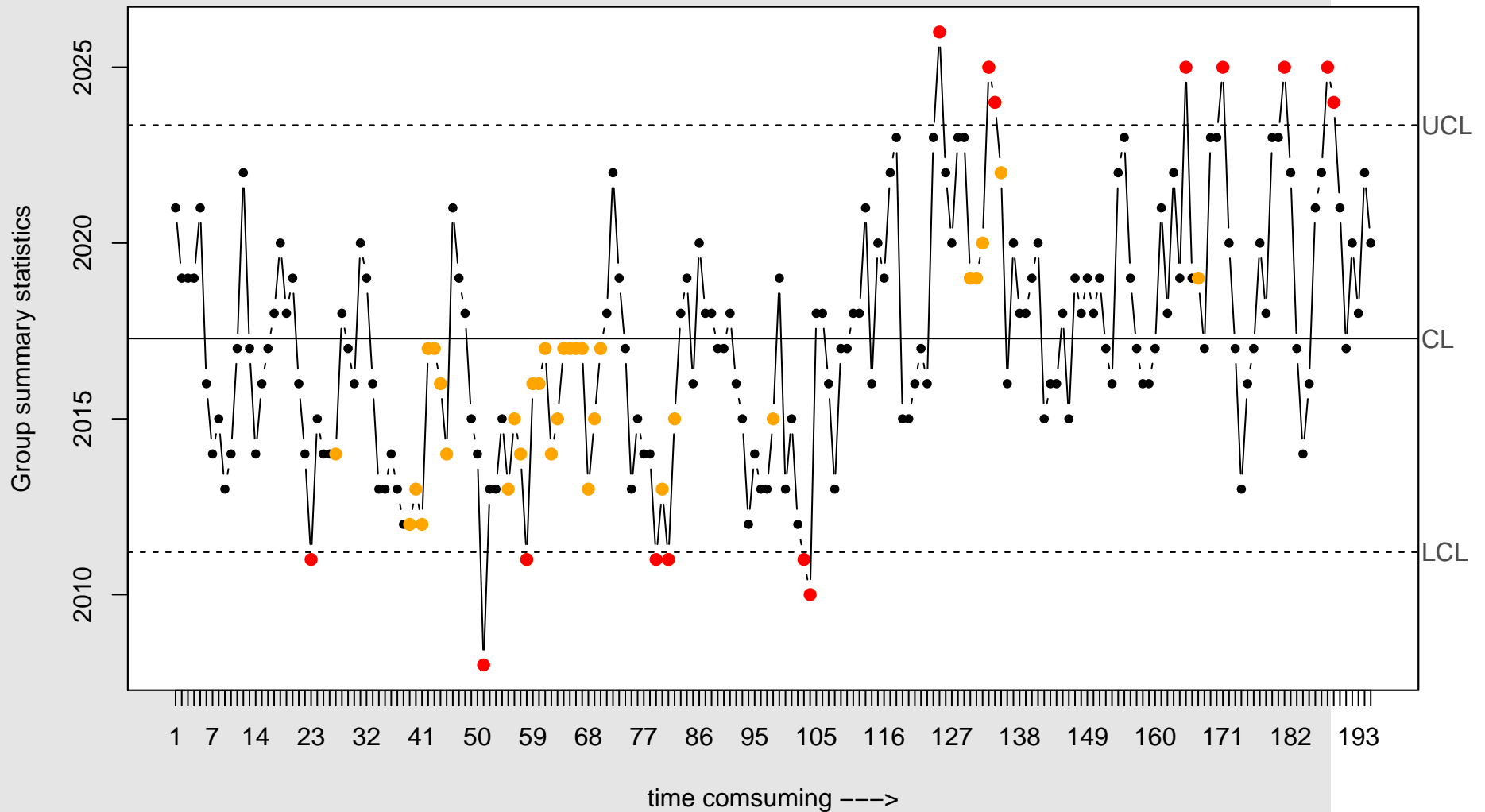
LCL = 2011.322

UCL = 2023.55

Number beyond limits = 10

Number violating runs = 34

## 254th column point of this product

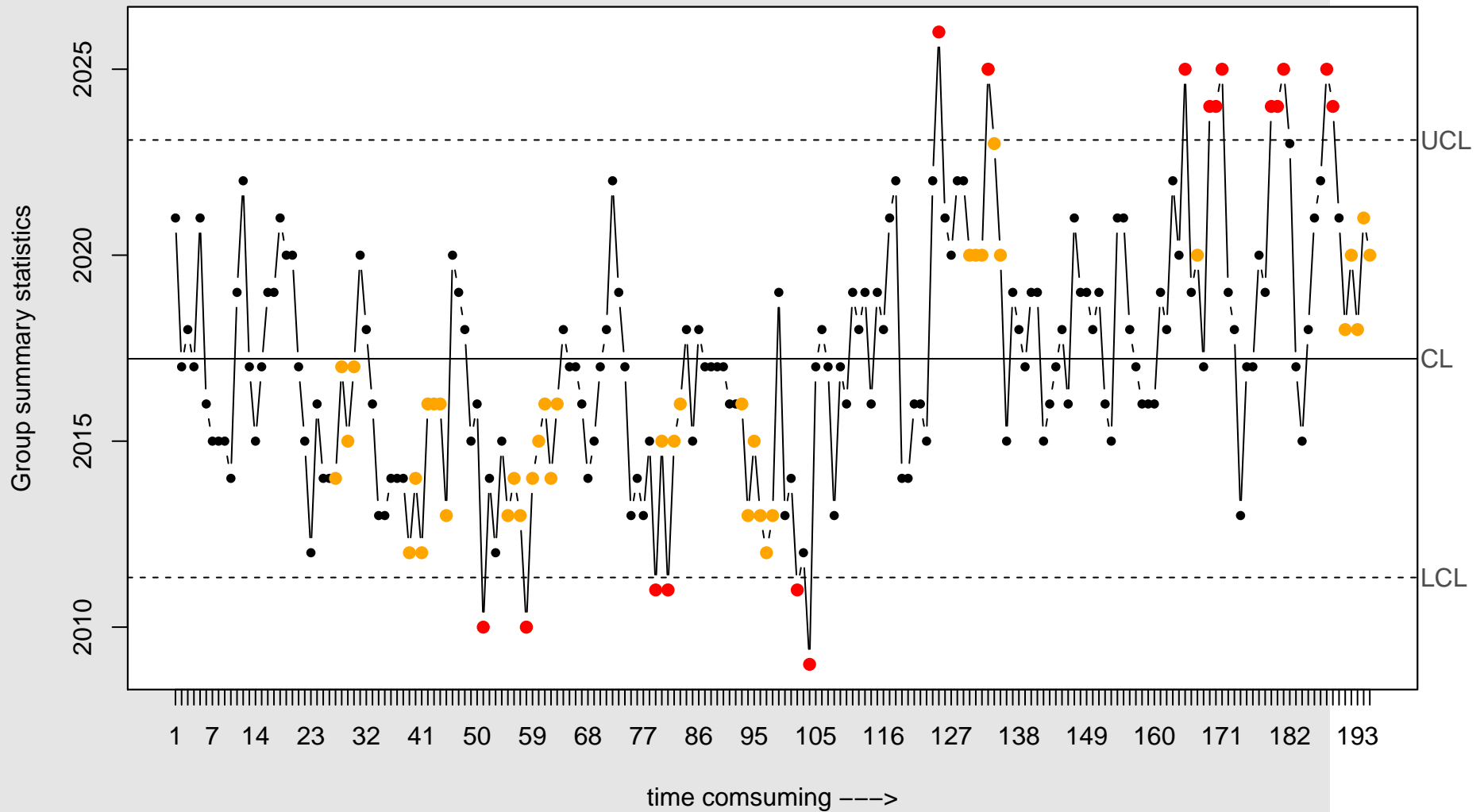


Number of groups = 195  
 Center = 2017.282  
 StdDev = 2.024384

LCL = 2011.209  
 UCL = 2023.355

Number beyond limits = 15  
 Number violating runs = 35

## 255th column point of this product

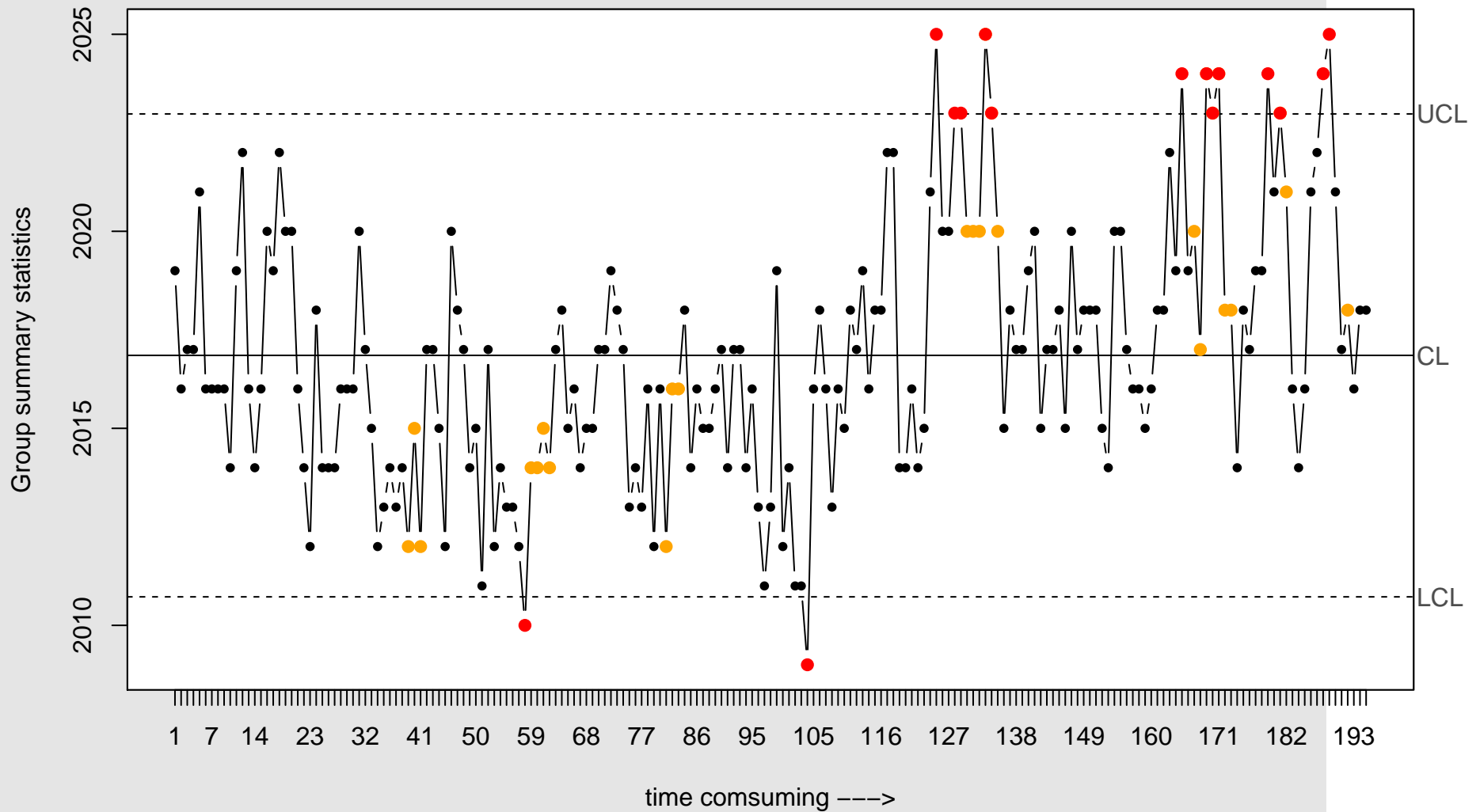


Number of groups = 195  
Center = 2017.215  
StdDev = 1.960408

LCL = 2011.334  
UCL = 2023.097

Number beyond limits = 17  
Number violating runs = 42

## 256th column point of this product



Number of groups = 195

Center = 2016.851

StdDev = 2.042663

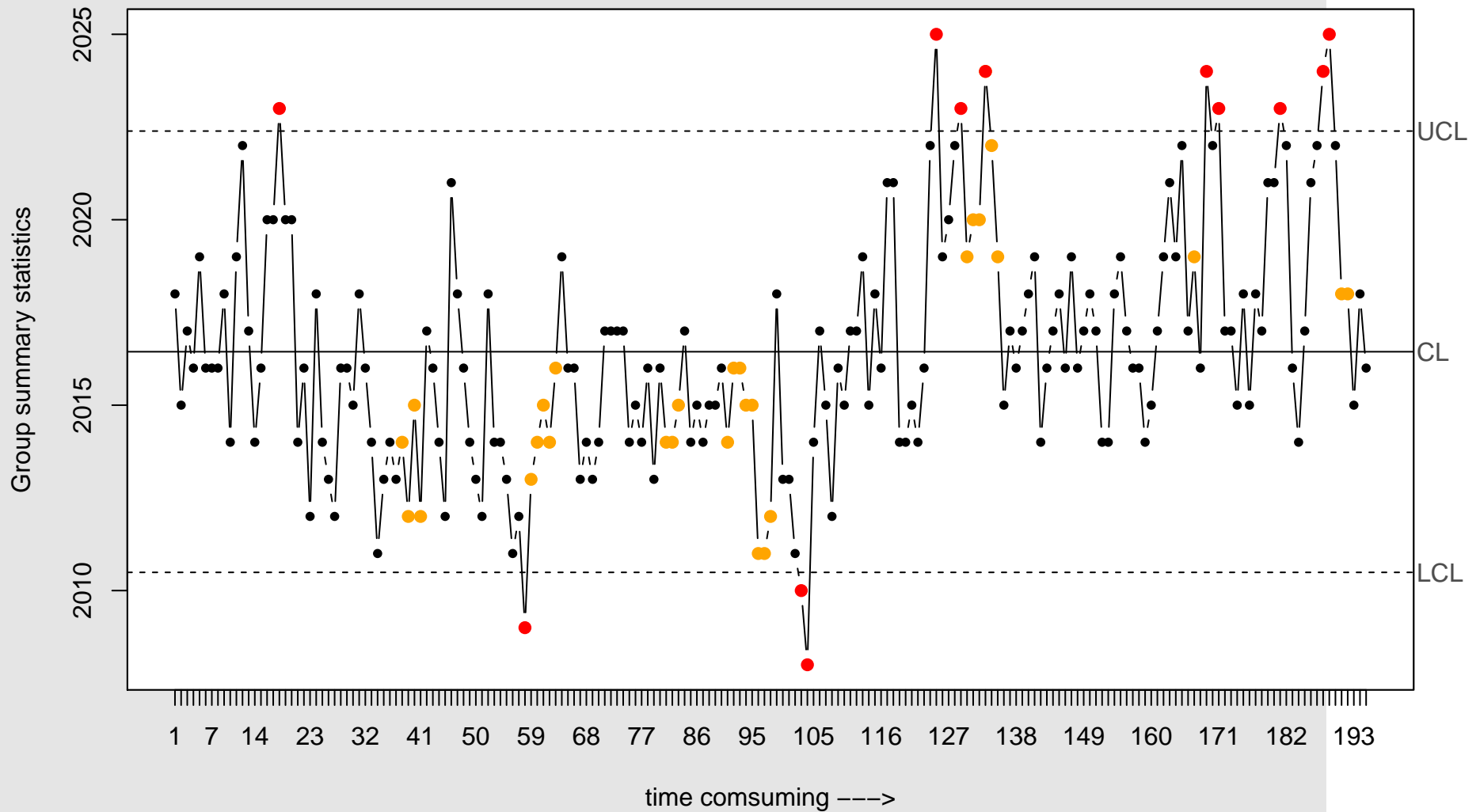
LCL = 2010.723

UCL = 2022.979

Number beyond limits = 15

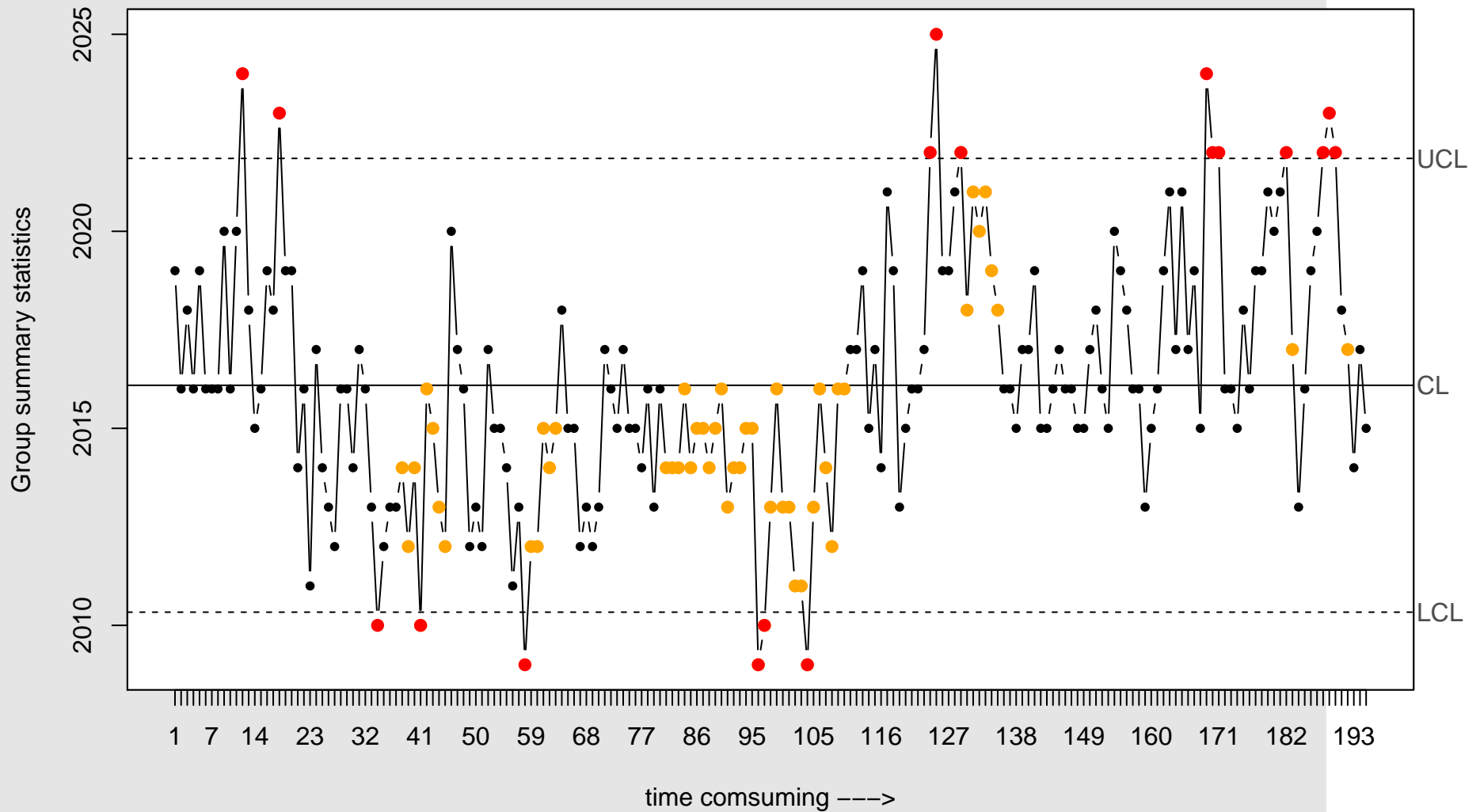
Number violating runs = 26

## 257th column point of this product





## 258th column point of this product

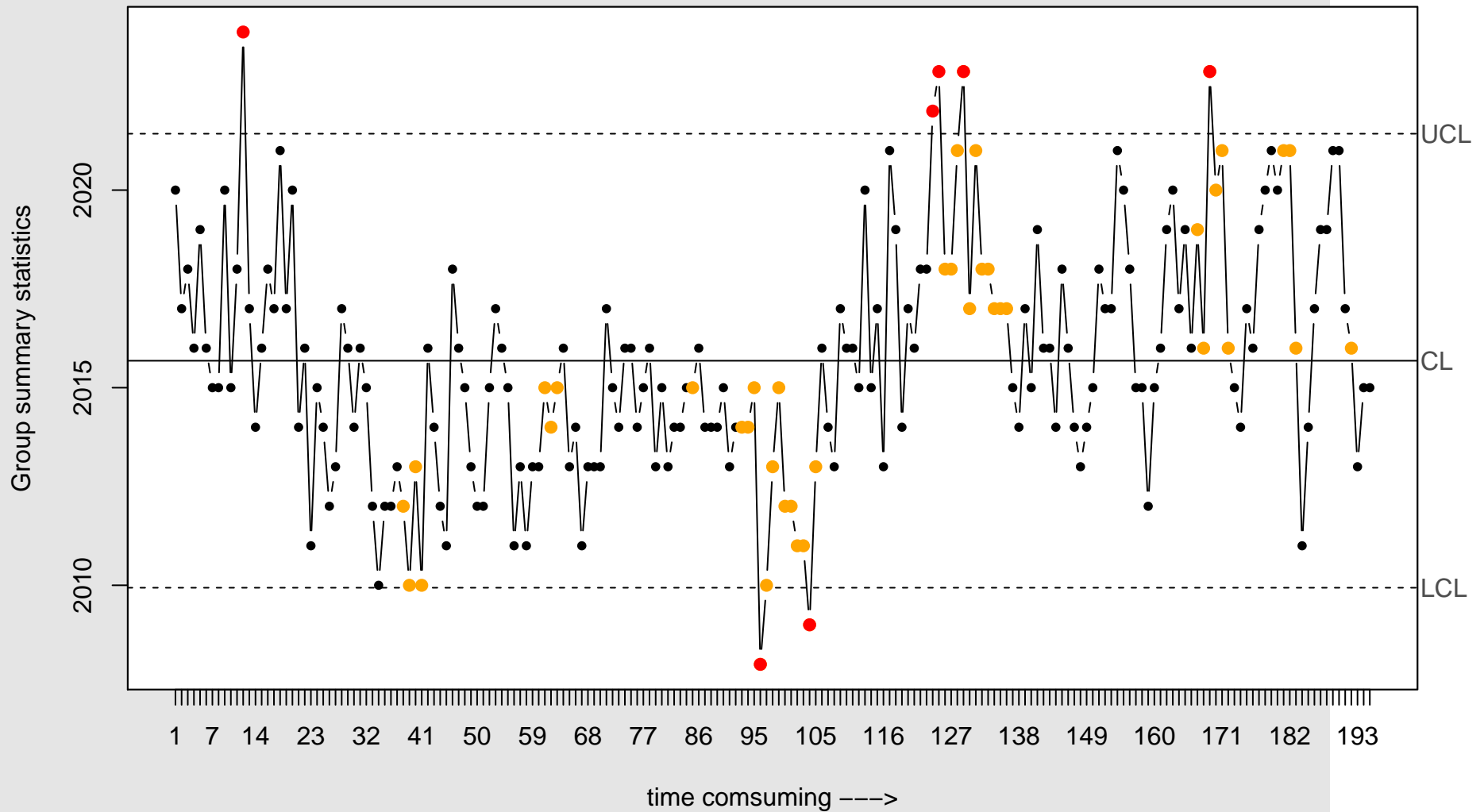


Number of groups = 195  
Center = 2016.092  
StdDev = 1.919281

LCL = 2010.334  
UCL = 2021.85

Number beyond limits = 18  
Number violating runs = 52

## 259th column point of this product



Number of groups = 195

Center = 2015.682

StdDev = 1.914711

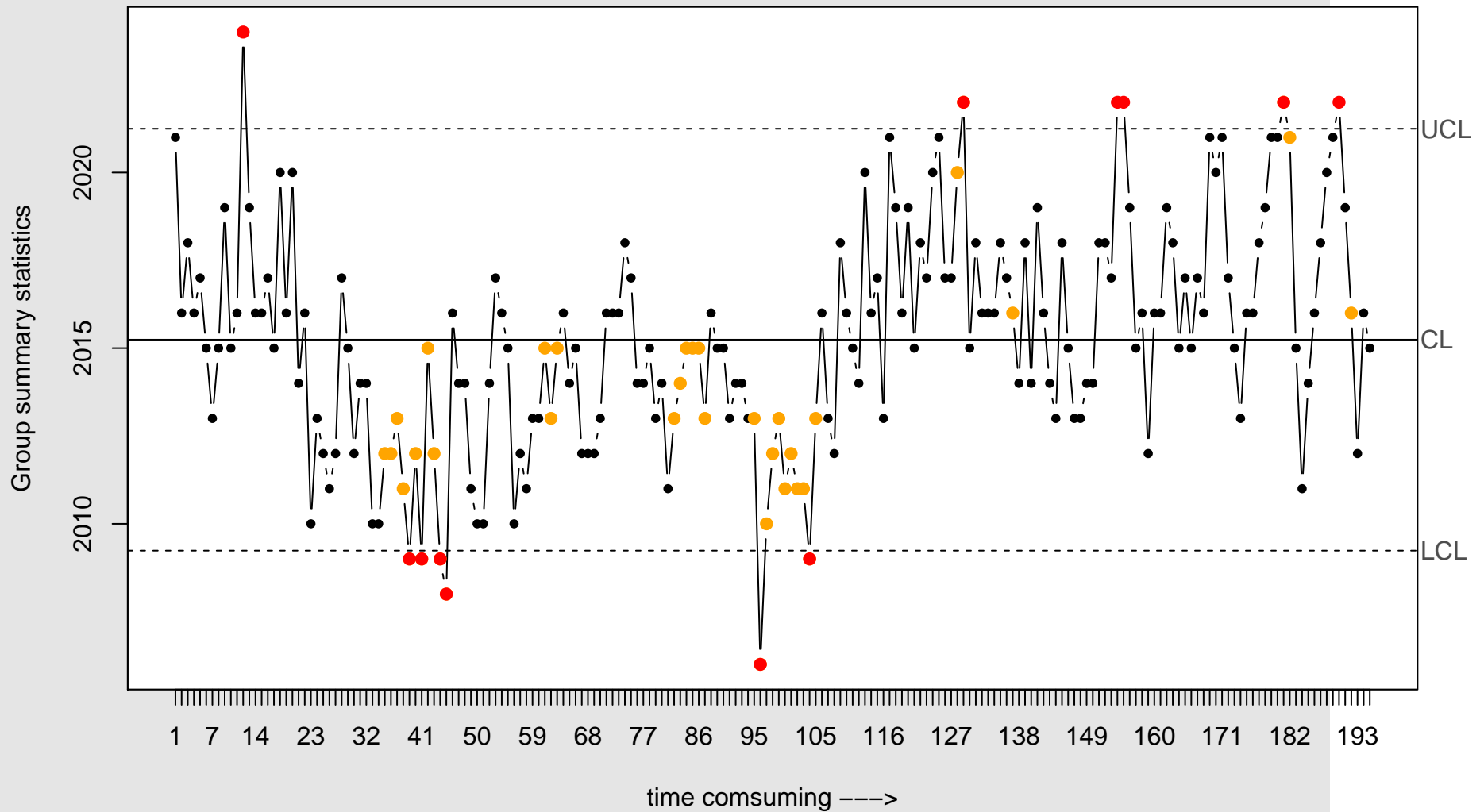
LCL = 2009.938

UCL = 2021.426

Number beyond limits = 7

Number violating runs = 42

## 260th column point of this product



Number of groups = 195

Center = 2015.241

StdDev = 2.001535

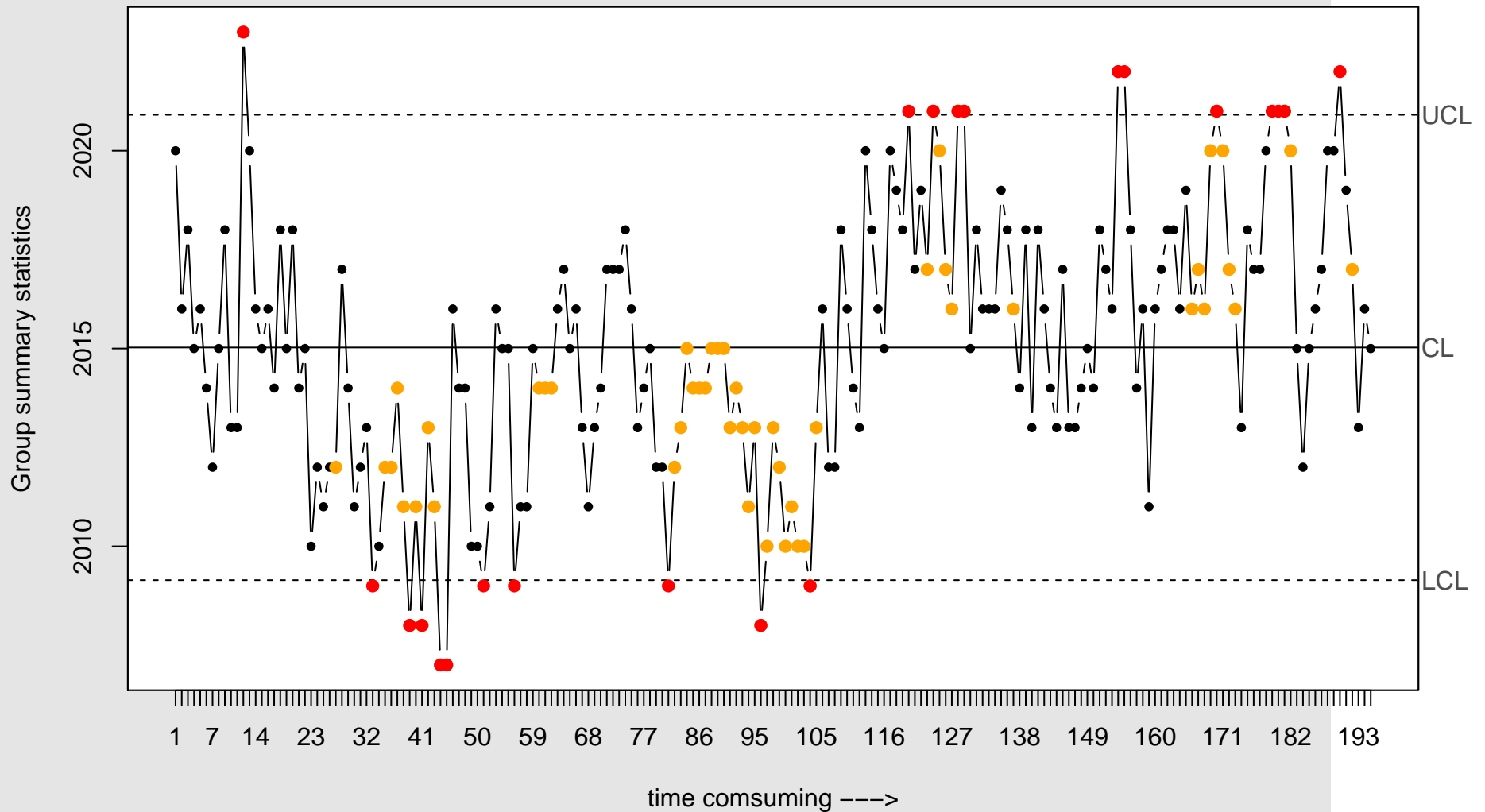
LCL = 2009.236

UCL = 2021.246

Number beyond limits = 12

Number violating runs = 37

## 261th column point of this product



Number of groups = 195

Center = 2015.026

StdDev = 1.960408

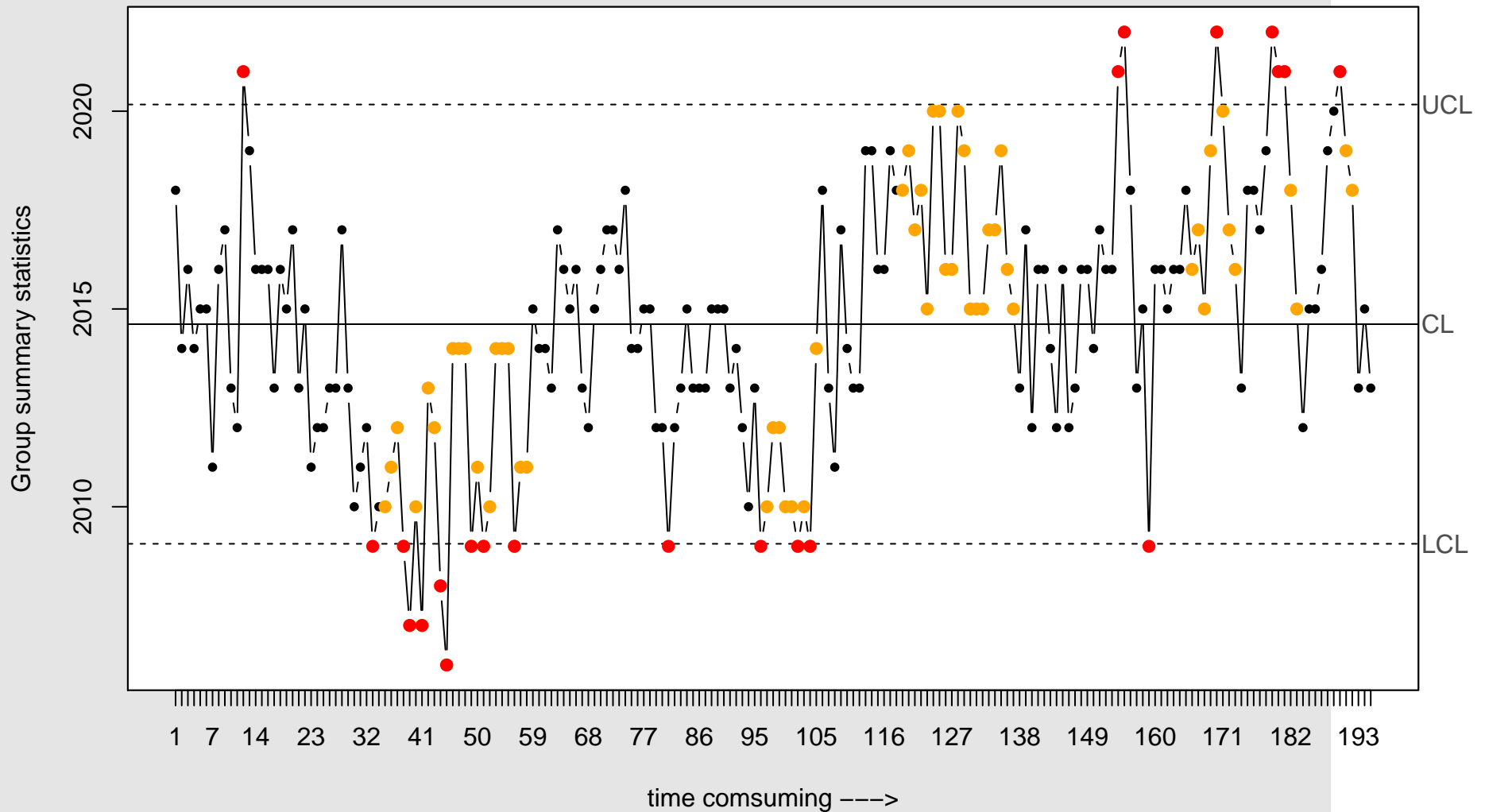
LCL = 2009.144

UCL = 2020.907

Number beyond limits = 22

Number violating runs = 58

## 262th column point of this product



Number of groups = 195

Center = 2014.615

StdDev = 1.850735

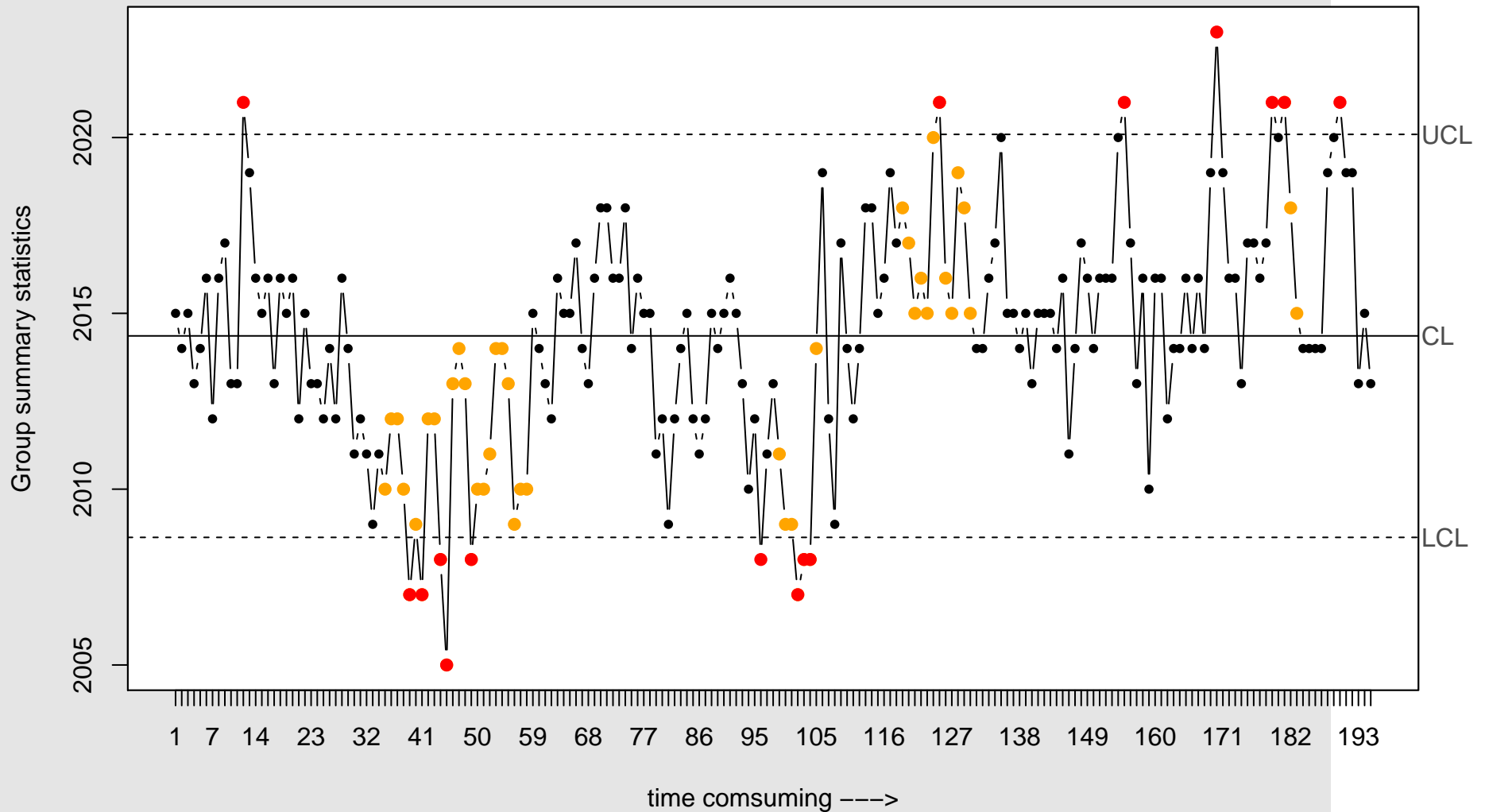
LCL = 2009.063

UCL = 2020.168

Number beyond limits = 22

Number violating runs = 65

## 263th column point of this product



Number of groups = 195

Center = 2014.359

StdDev = 1.910141

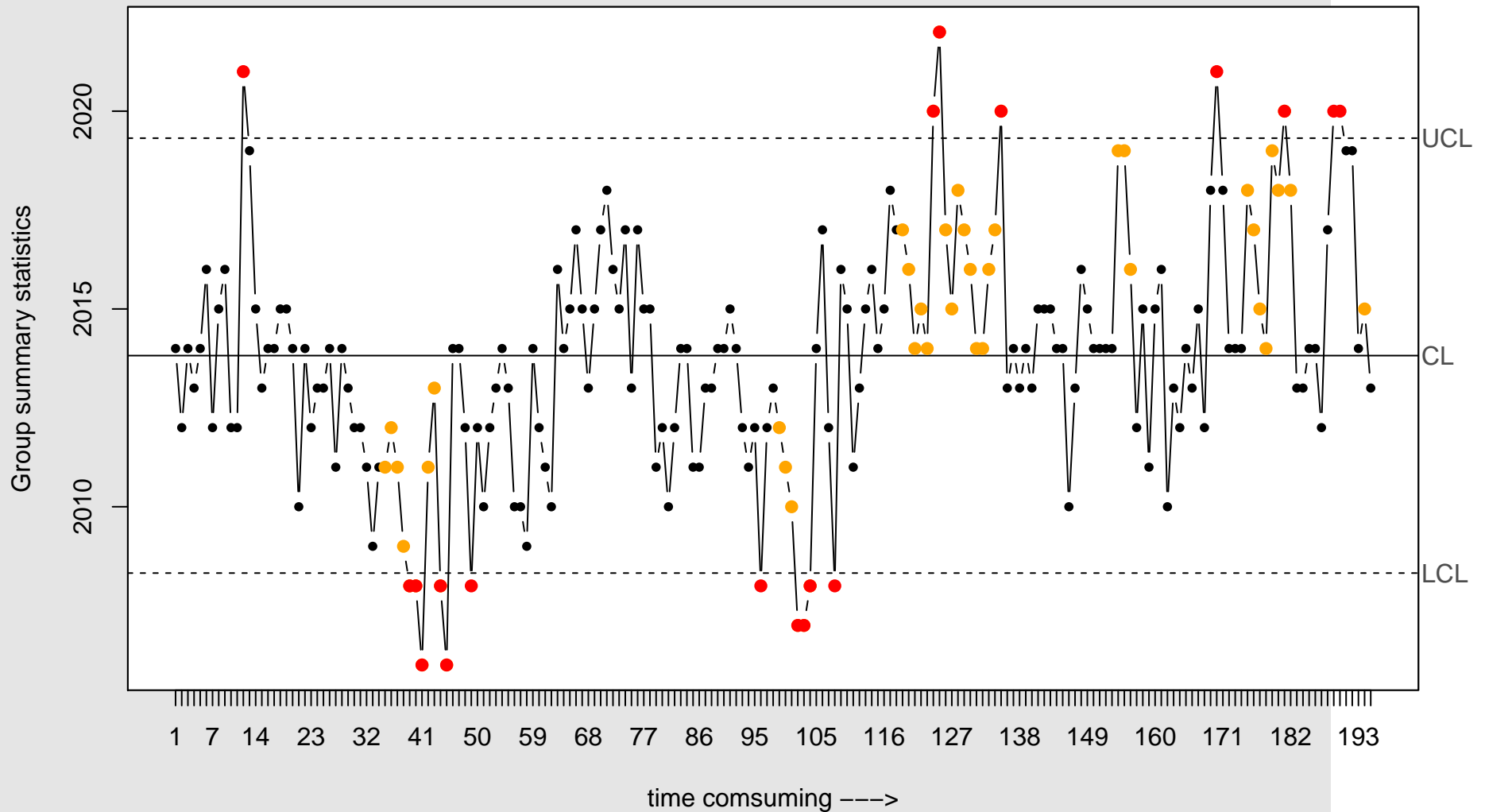
LCL = 2008.629

UCL = 2020.089

Number beyond limits = 16

Number violating runs = 46

## 264th column point of this product



Number of groups = 195

Center = 2013.821

StdDev = 1.832456

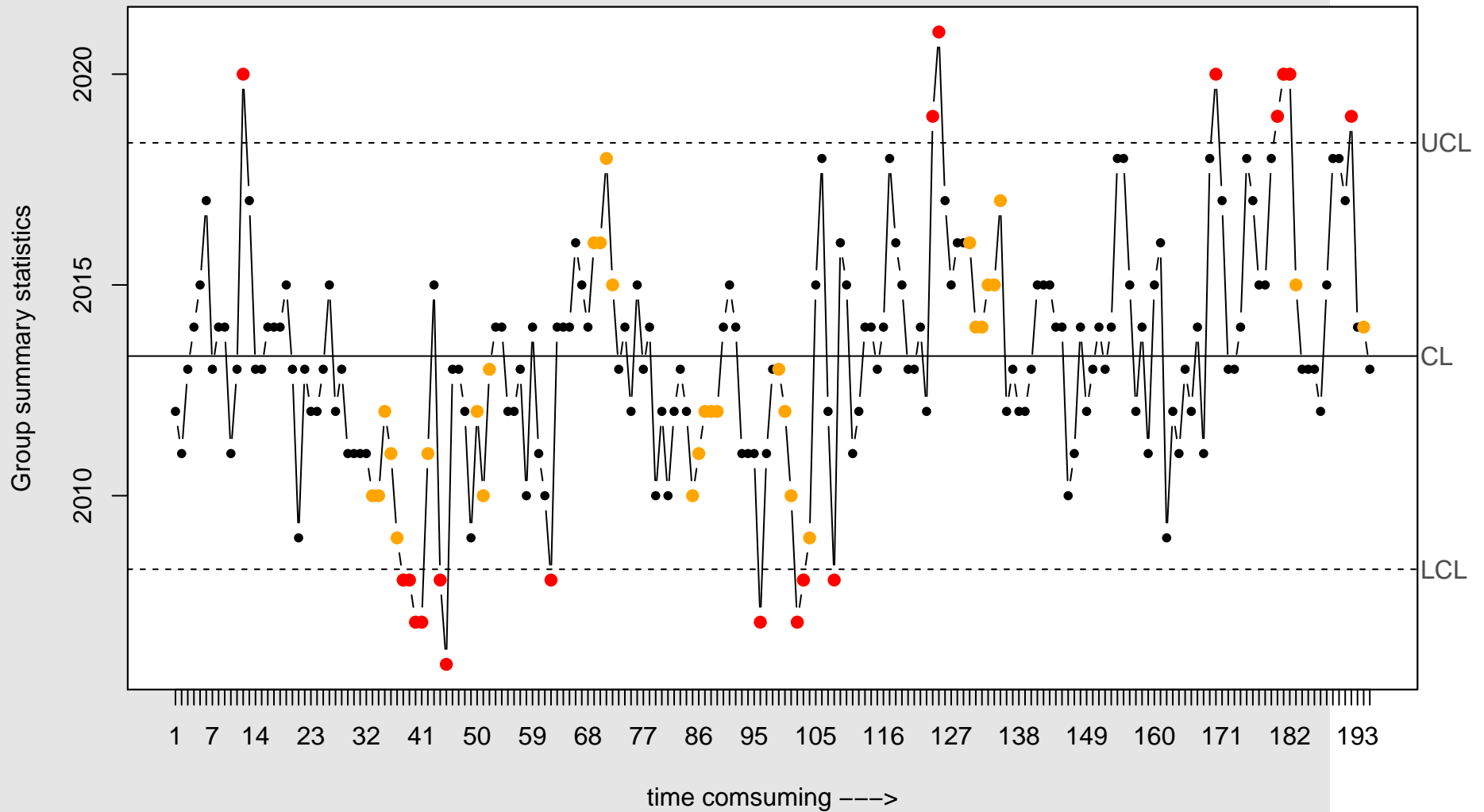
LCL = 2008.323

UCL = 2019.318

Number beyond limits = 19

Number violating runs = 46

## 265th column point of this product



Number of groups = 195

Center = 2013.313

StdDev = 1.686225

LCL = 2008.254

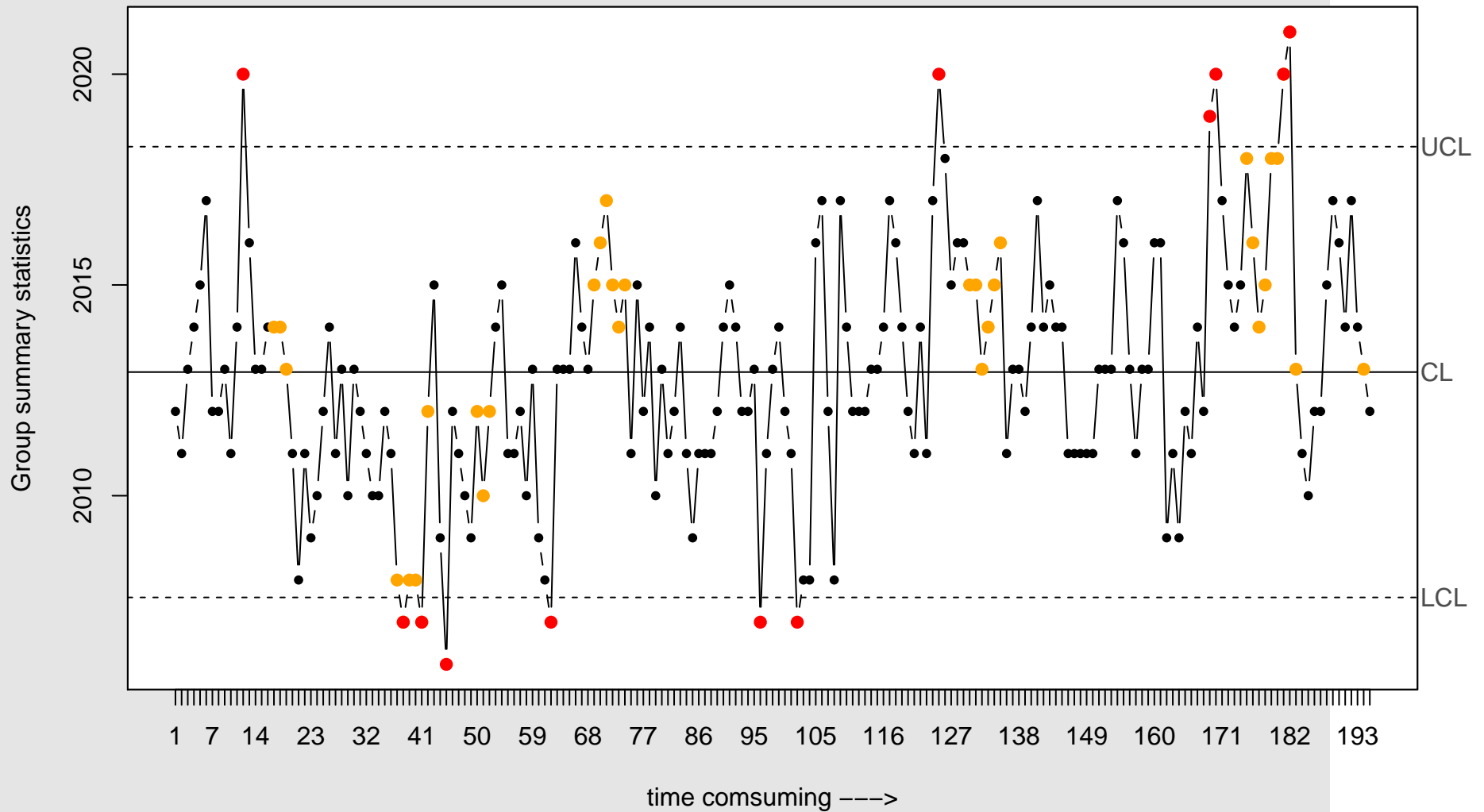
UCL = 2018.371

Number beyond limits = 19

Number violating runs = 39



## 266th column point of this product



Number of groups = 195

Center = 2012.933

StdDev = 1.782189

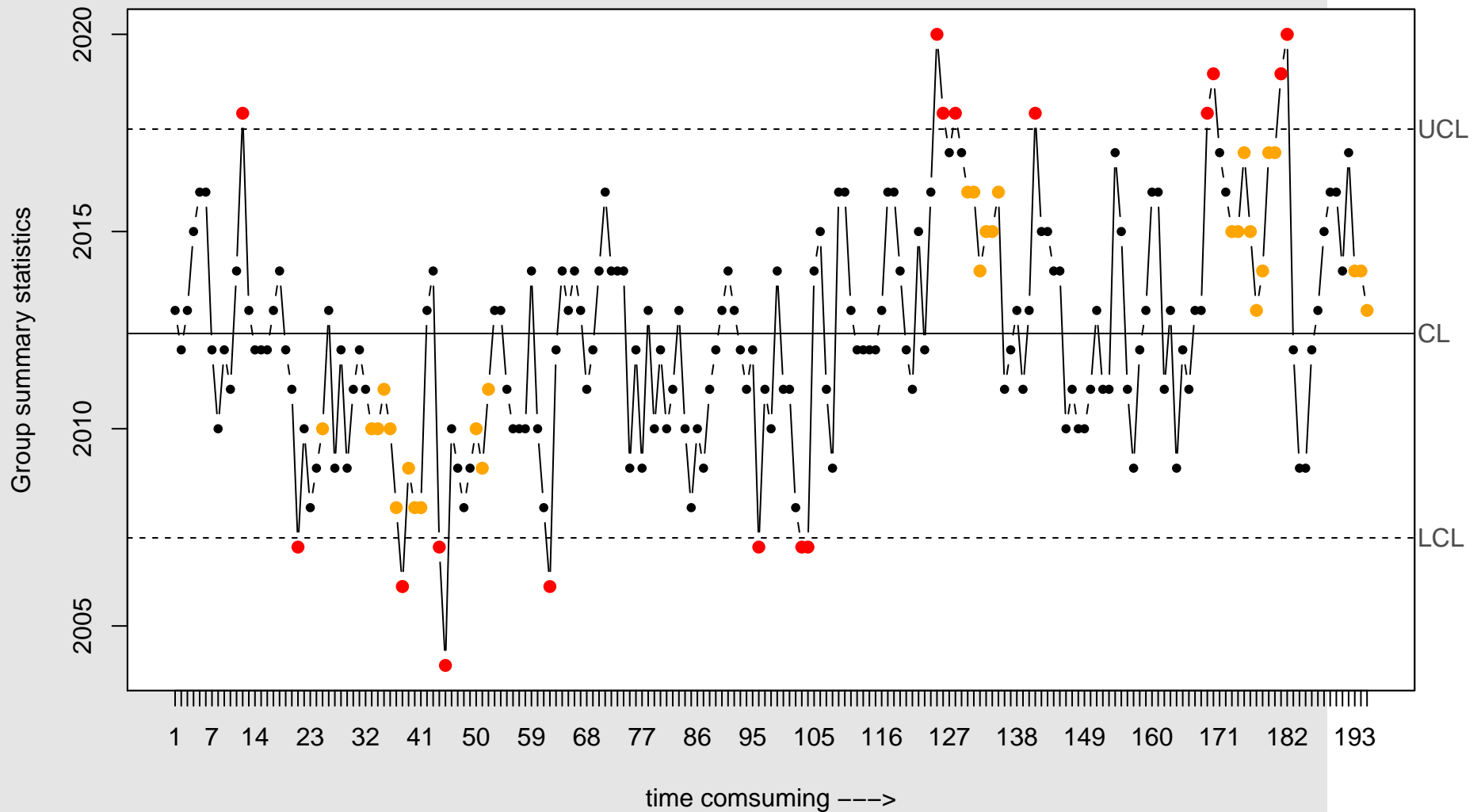
LCL = 2007.587

UCL = 2018.28

Number beyond limits = 12

Number violating runs = 34

## 267th column point of this product



Number of groups = 195

Center = 2012.415

StdDev = 1.727352

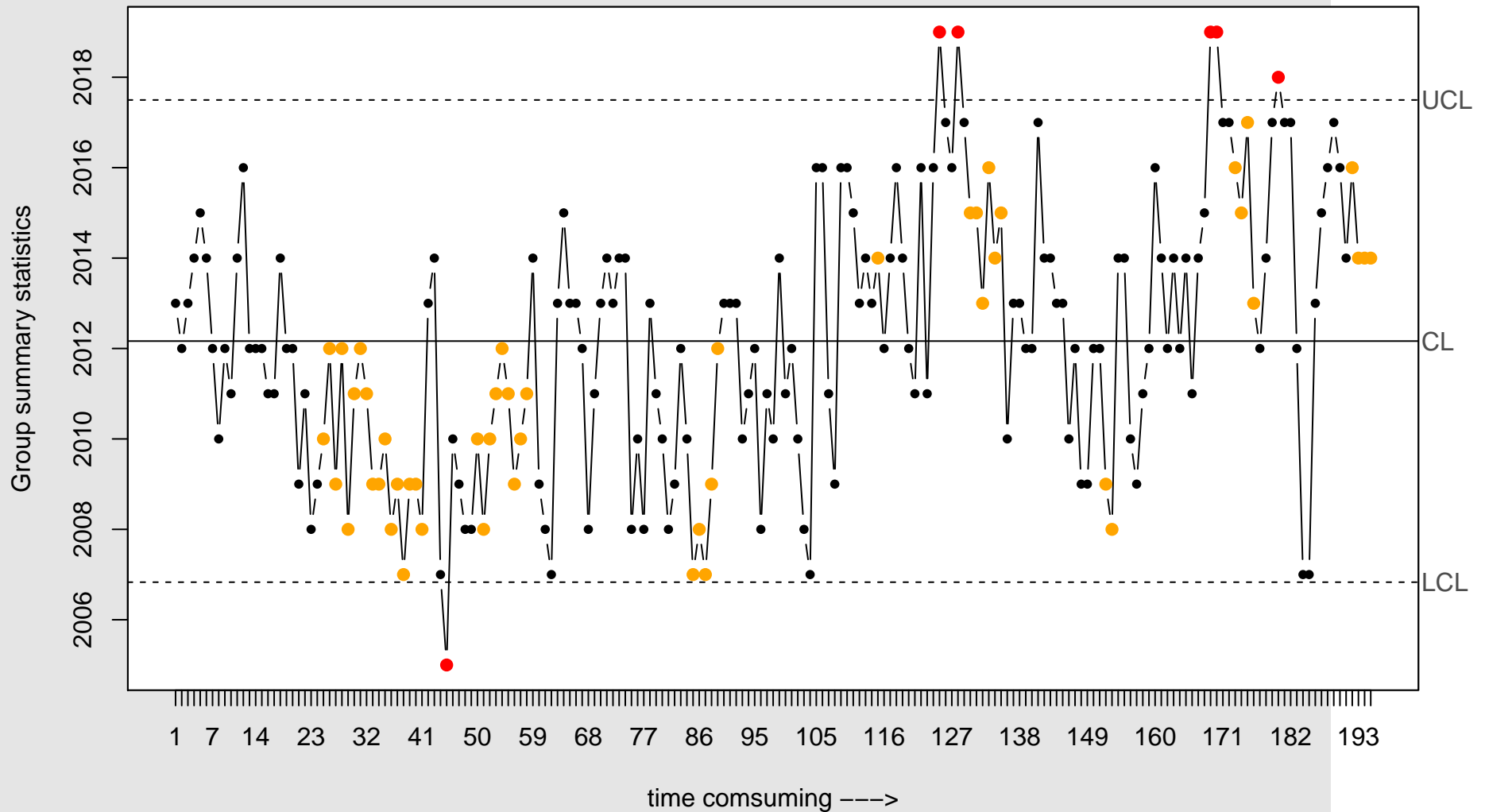
LCL = 2007.233

UCL = 2017.597

Number beyond limits = 17

Number violating runs = 32

## 268th column point of this product

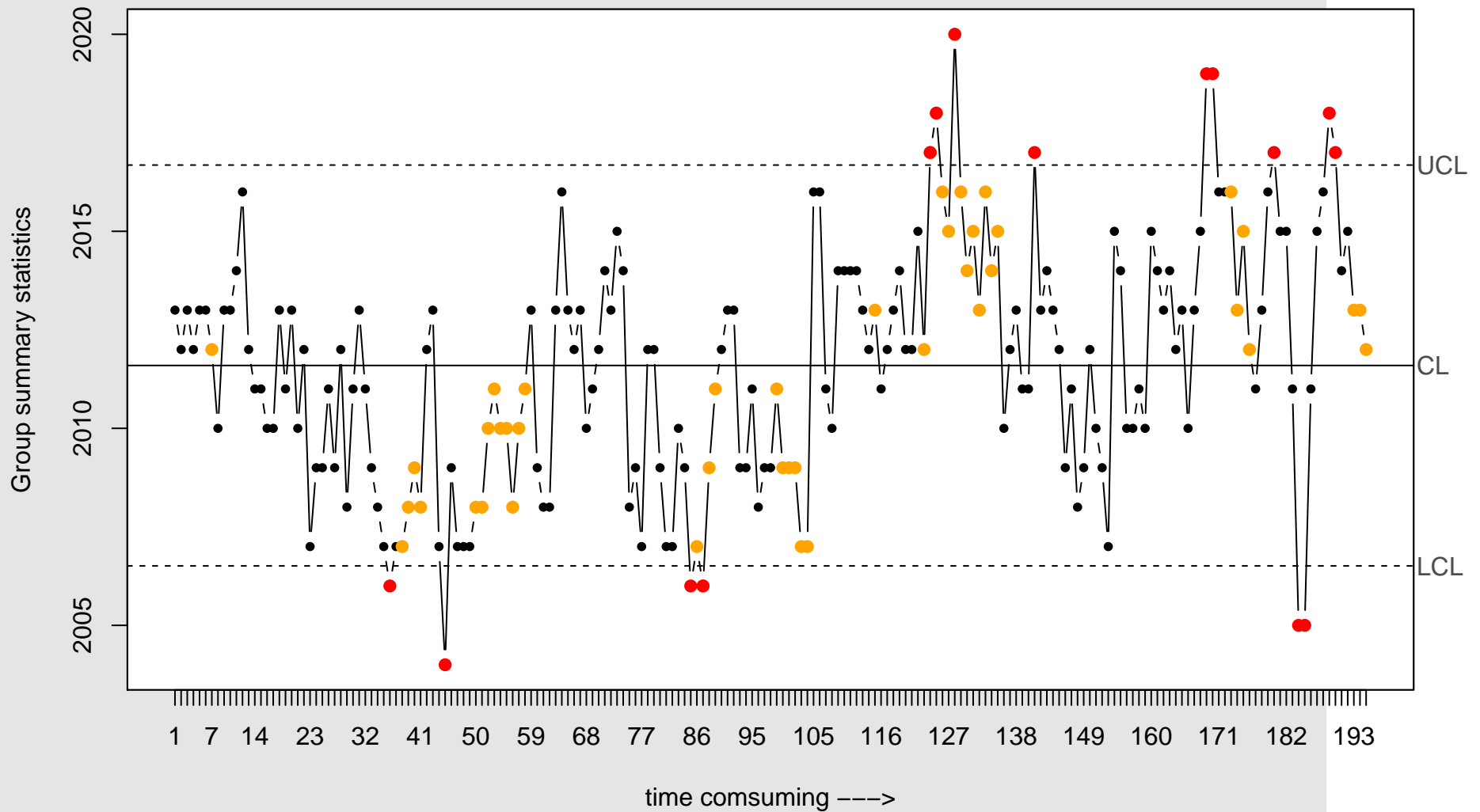


Number of groups = 195  
 Center = 2012.164  
 StdDev = 1.777619

LCL = 2006.831  
 UCL = 2017.497

Number beyond limits = 6  
 Number violating runs = 48

## 269th column point of this product



Number of groups = 195

Center = 2011.595

StdDev = 1.695364

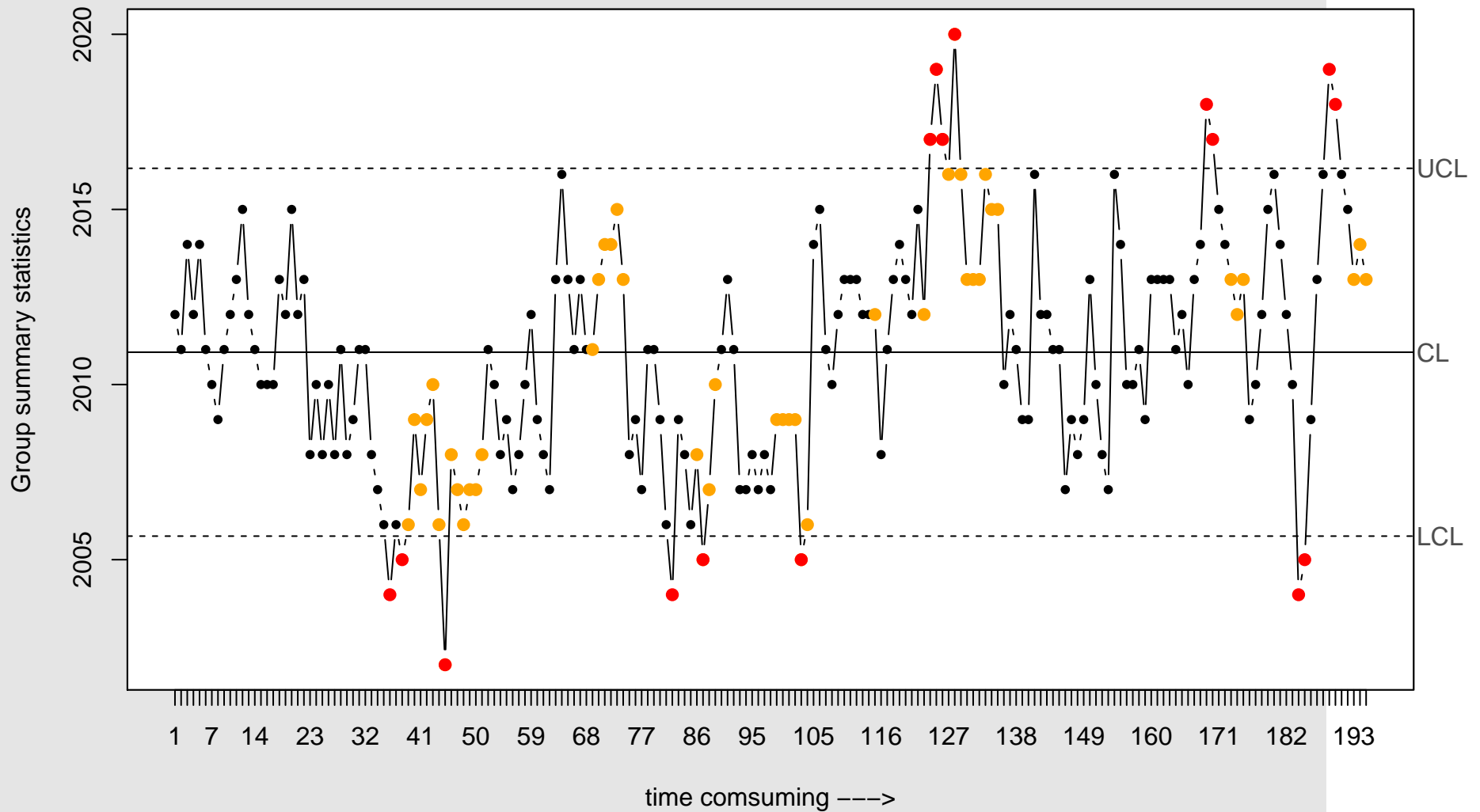
LCL = 2006.509

UCL = 2016.681

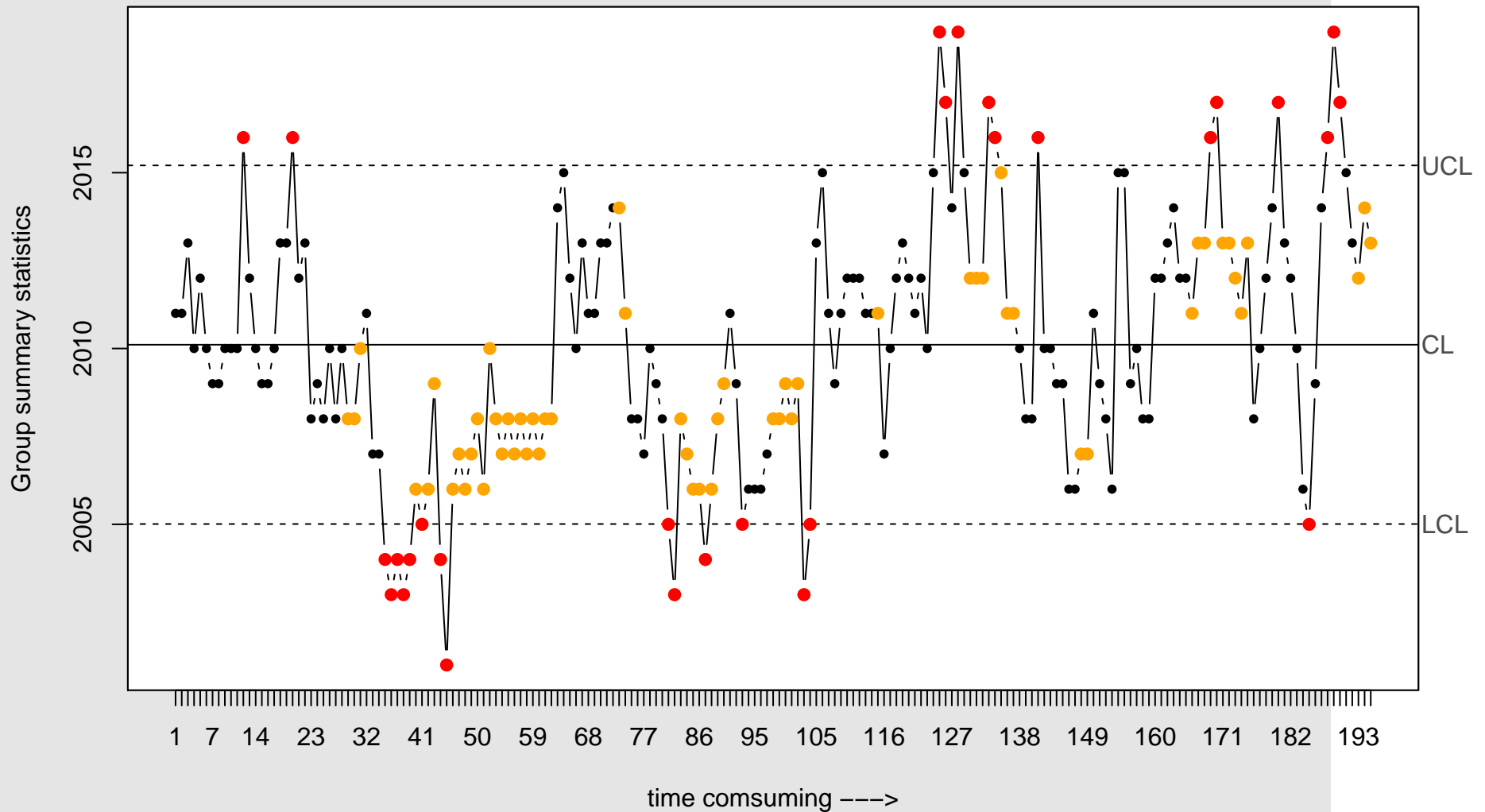
Number beyond limits = 15

Number violating runs = 45

## 270th column point of this product



## 271th column point of this product

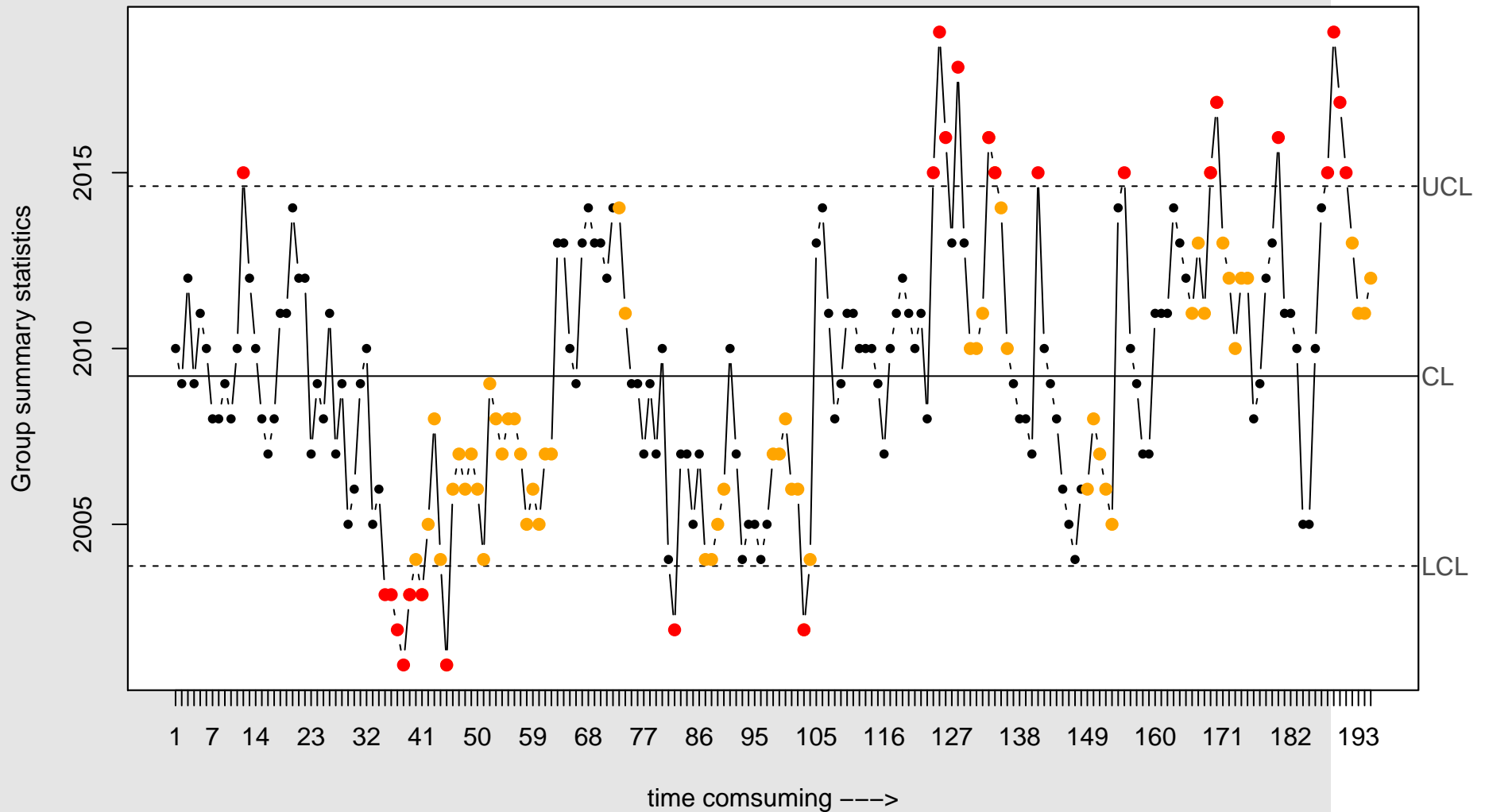


Number of groups = 195  
 Center = 2010.108  
 StdDev = 1.699934

LCL = 2005.008  
 UCL = 2015.207

Number beyond limits = 29  
 Number violating runs = 70

## 272th column point of this product



Number of groups = 195

Center = 2009.215

StdDev = 1.800468

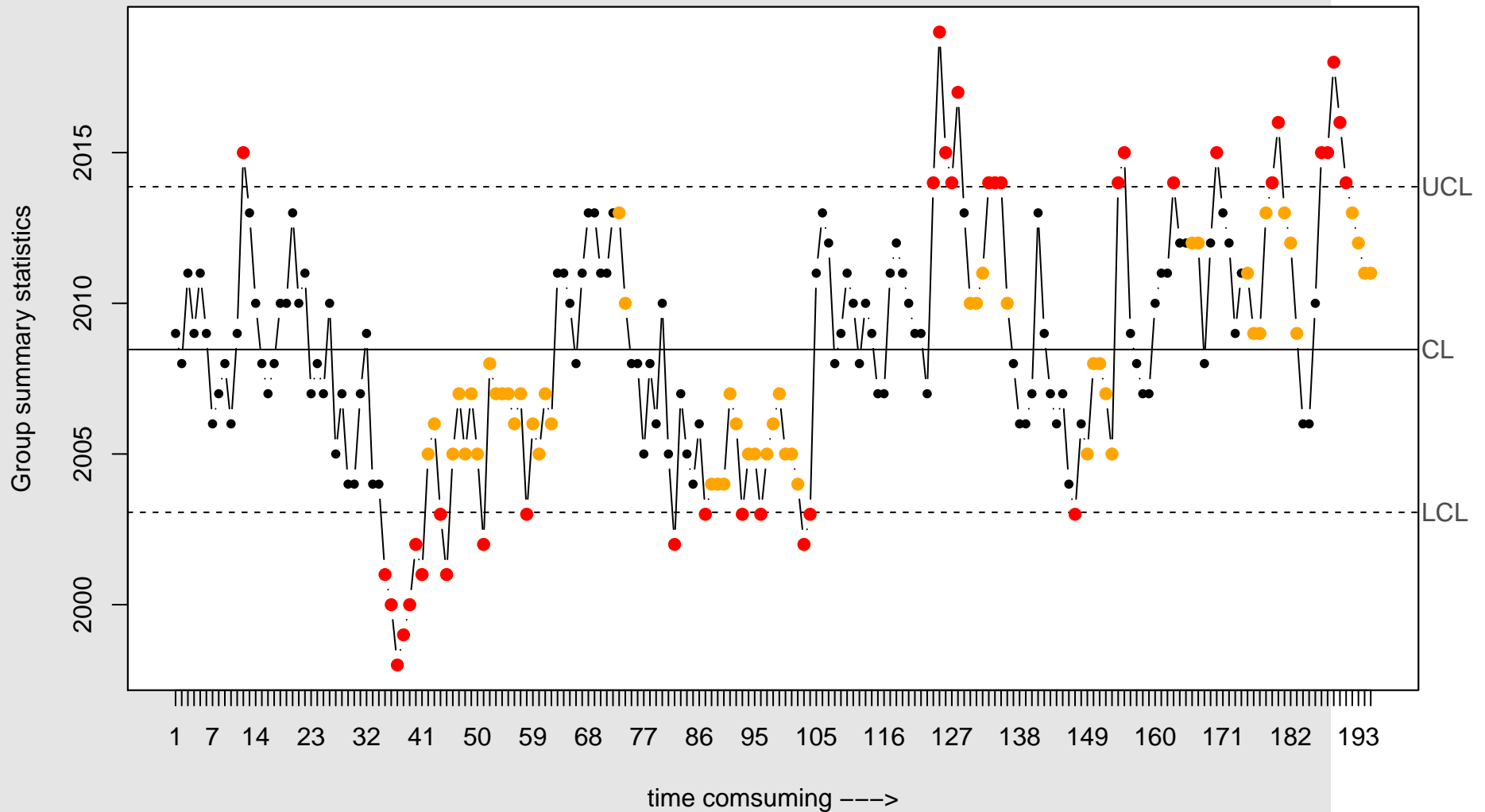
LCL = 2003.814

UCL = 2014.617

Number beyond limits = 25

Number violating runs = 63

## 273th column point of this product



Number of groups = 195

Center = 2008.467

StdDev = 1.800468

LCL = 2003.065

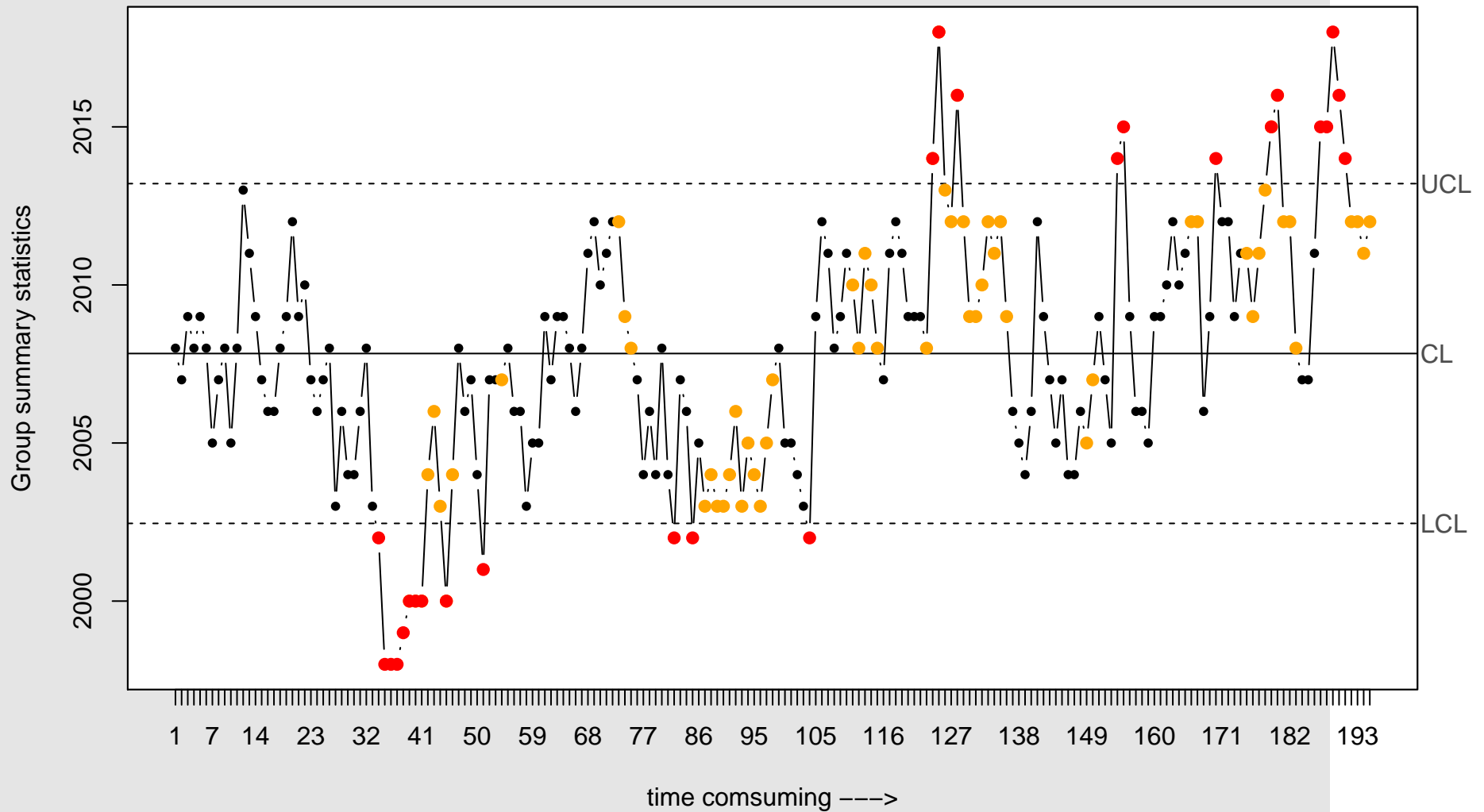
UCL = 2013.868

Number beyond limits = 38

Number violating runs = 71



## 274th column point of this product

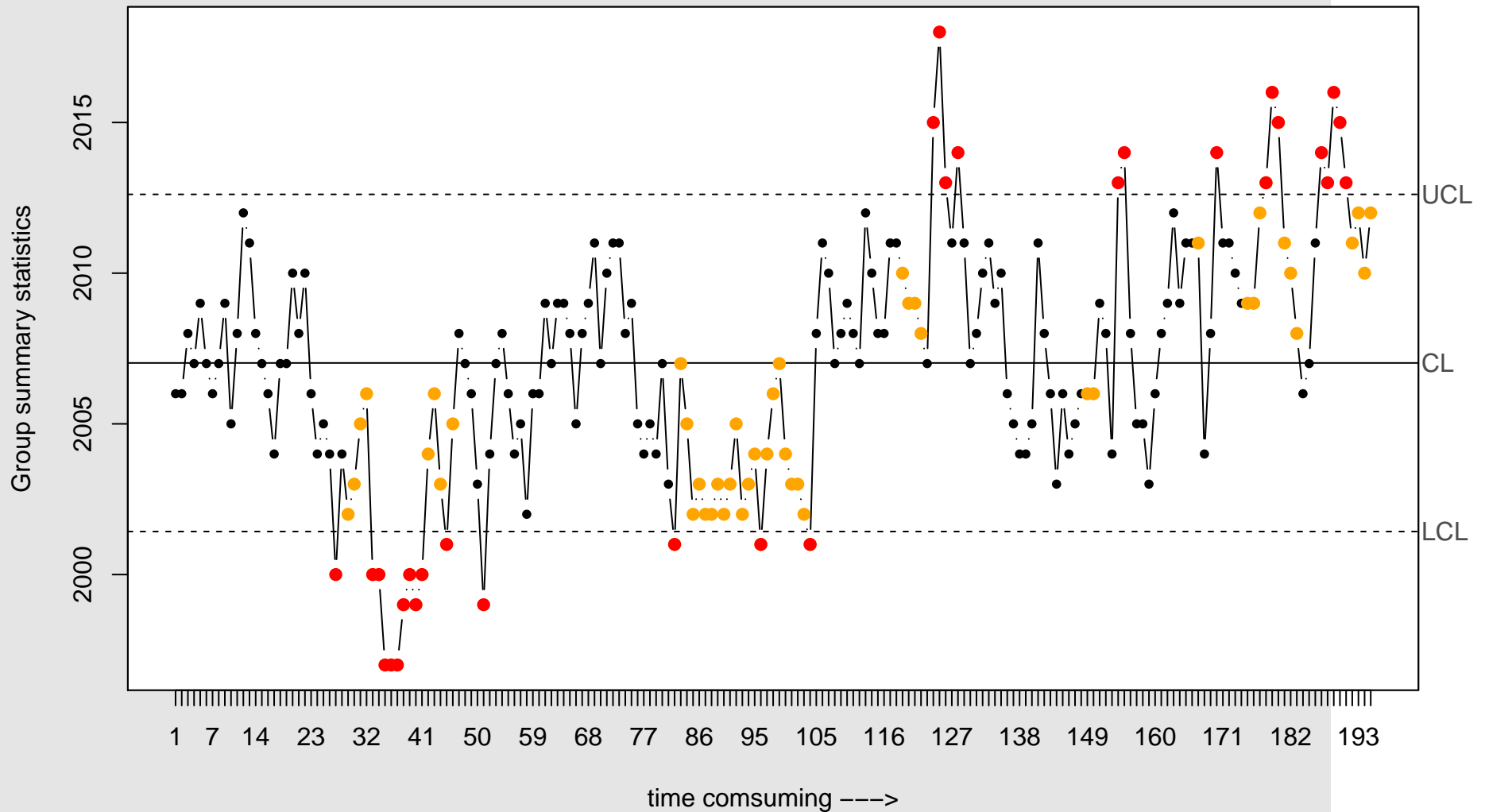


Number of groups = 195  
 Center = 2007.831  
 StdDev = 1.791329

LCL = 2002.457  
 UCL = 2013.205

Number beyond limits = 26  
 Number violating runs = 60

## 275th column point of this product

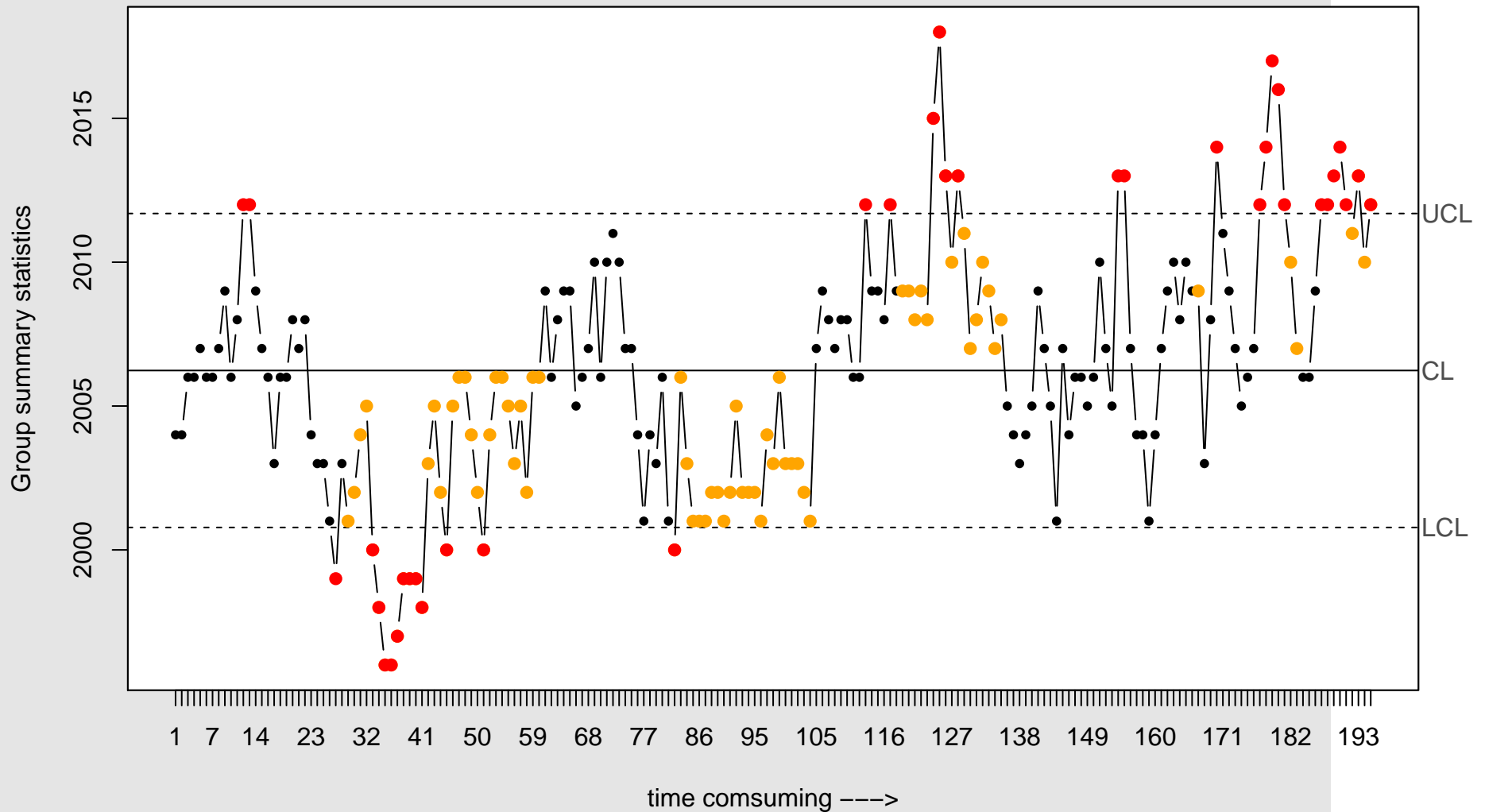


Number of groups = 195  
Center = 2007.021  
StdDev = 1.864444

LCL = 2001.427  
UCL = 2012.614

Number beyond limits = 30  
Number violating runs = 61

## 276th column point of this product

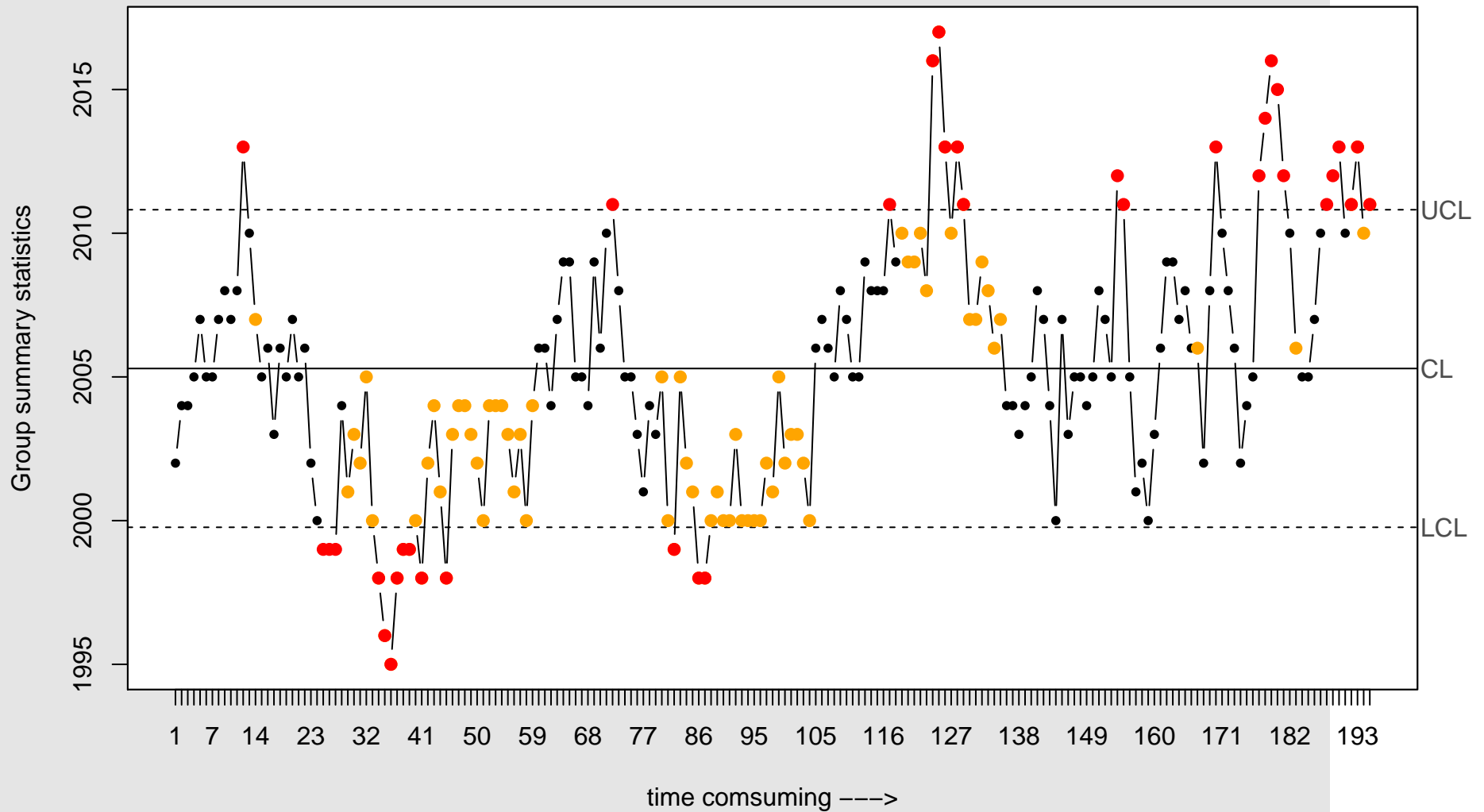


Number of groups = 195  
 Center = 2006.236  
 StdDev = 1.818747

LCL = 2000.78  
 UCL = 2011.692

Number beyond limits = 36  
 Number violating runs = 79

## 277th column point of this product

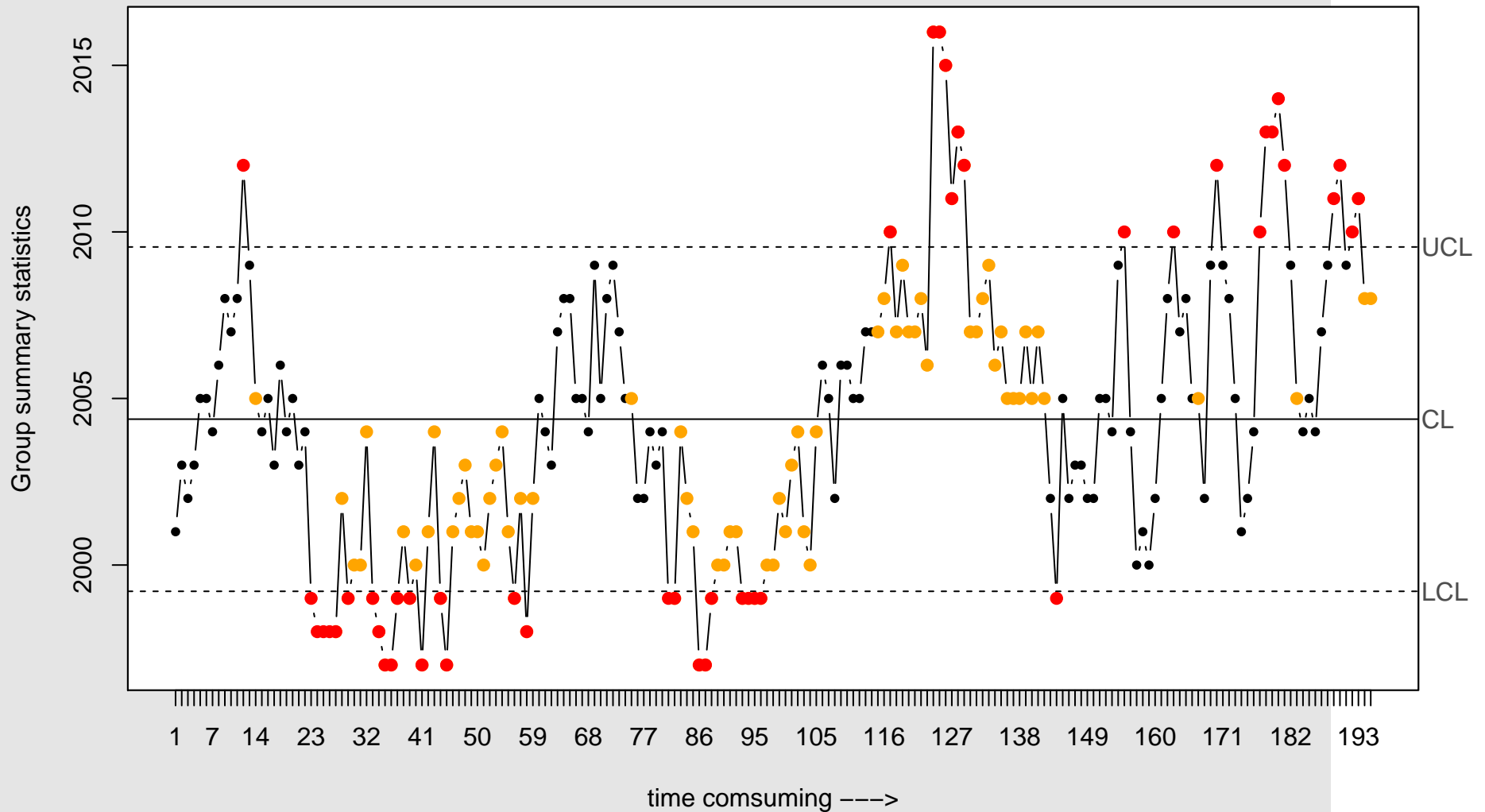


Number of groups = 195  
Center = 2005.292  
StdDev = 1.841595

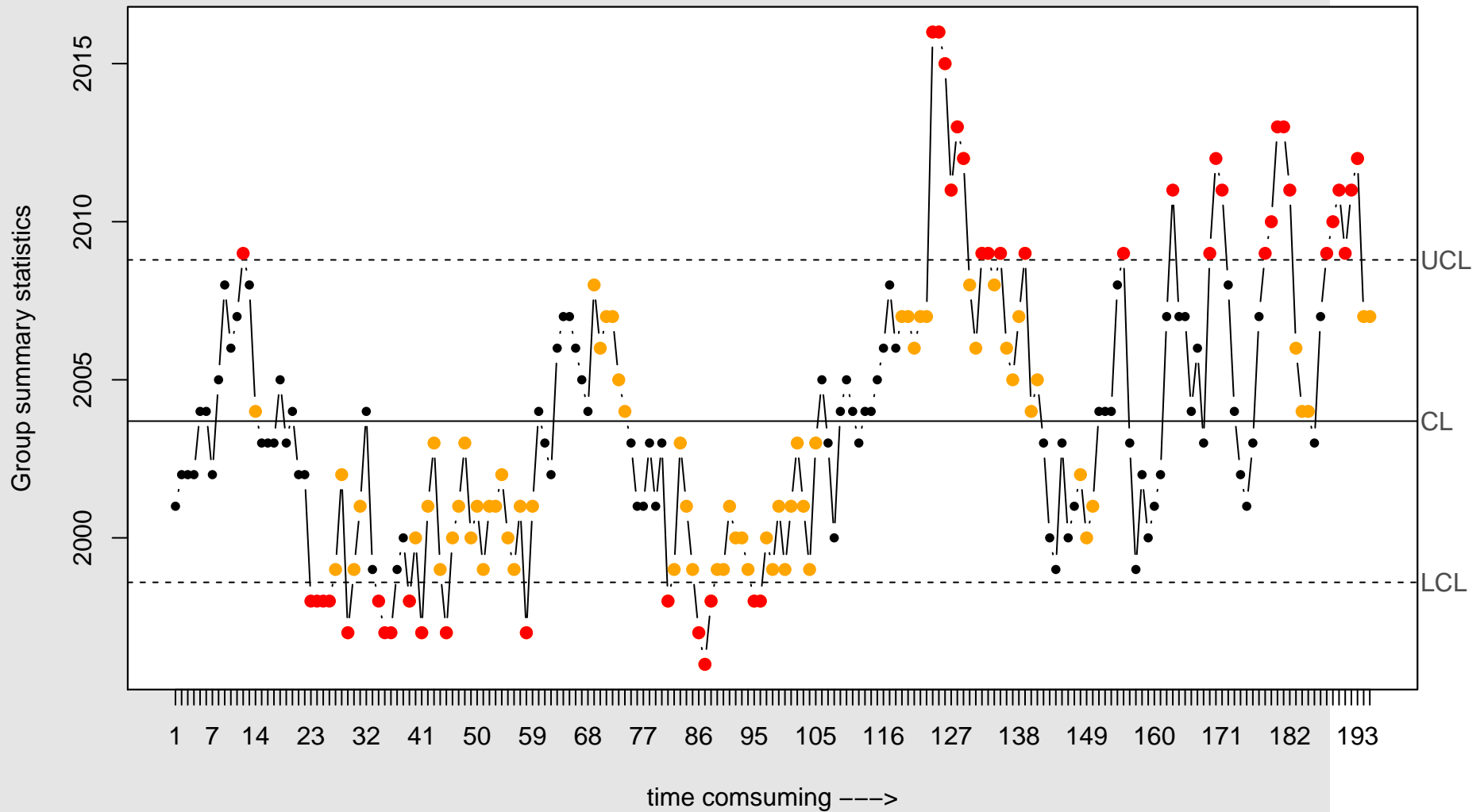
LCL = 1999.768  
UCL = 2010.817

Number beyond limits = 36  
Number violating runs = 80

## 278th column point of this product



## 279th column point of this product



Number of groups = 195

Center = 2003.692

StdDev = 1.699934

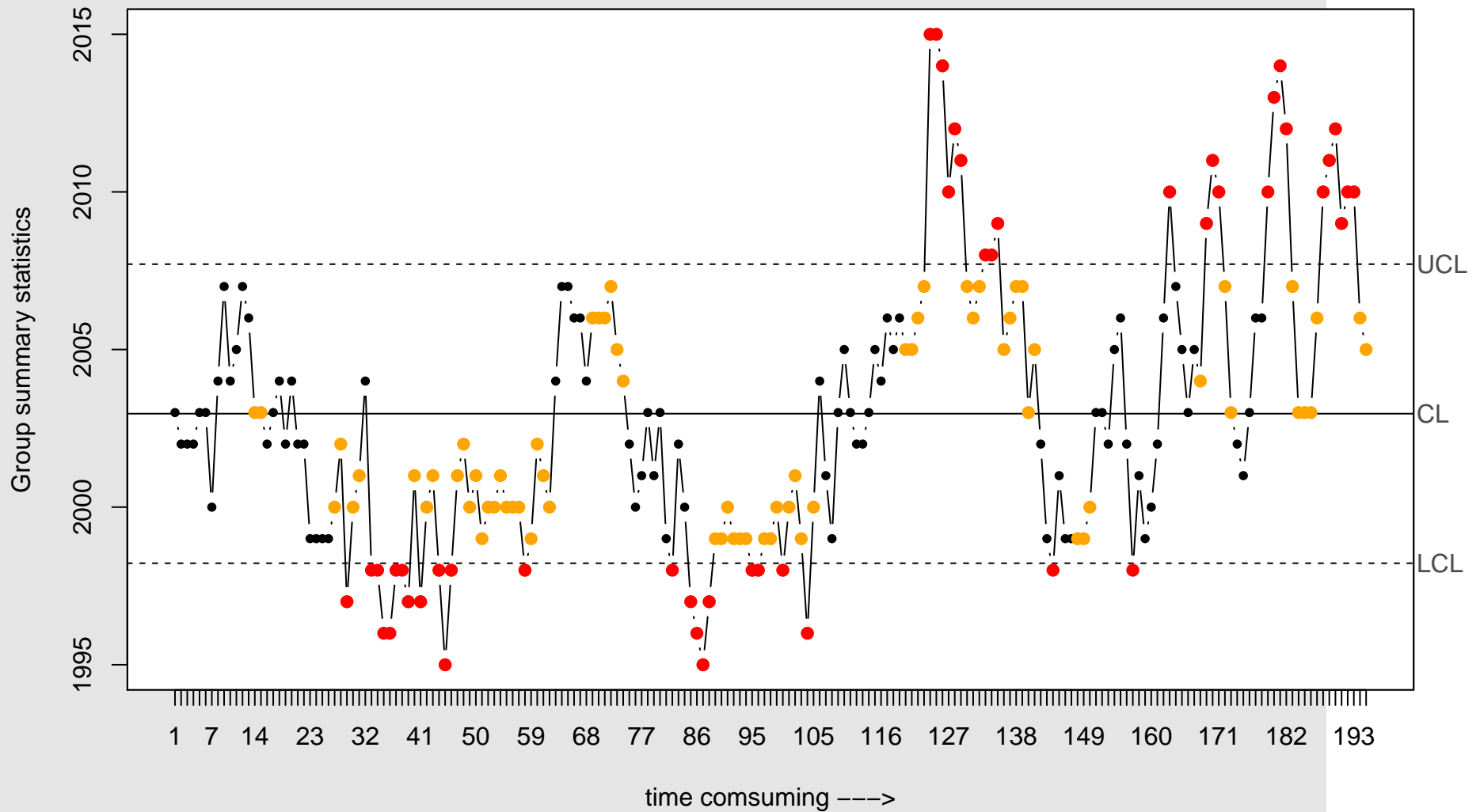
LCL = 1998.593

UCL = 2008.792

Number beyond limits = 45

Number violating runs = 90

## 280th column point of this product



Number of groups = 195

Center = 2002.964

StdDev = 1.581122

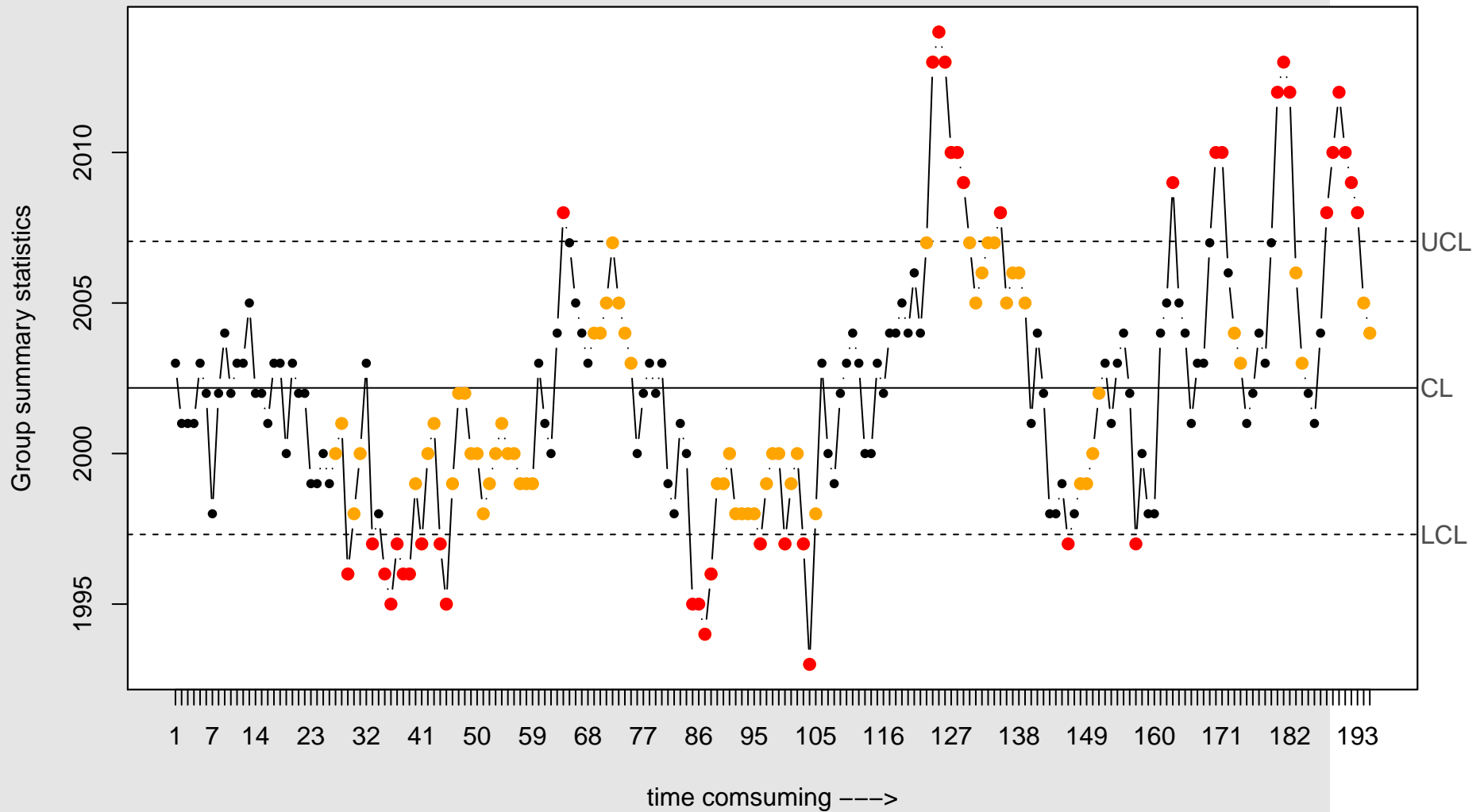
LCL = 1998.221

UCL = 2007.707

Number beyond limits = 47

Number violating runs = 101

## 281th column point of this product



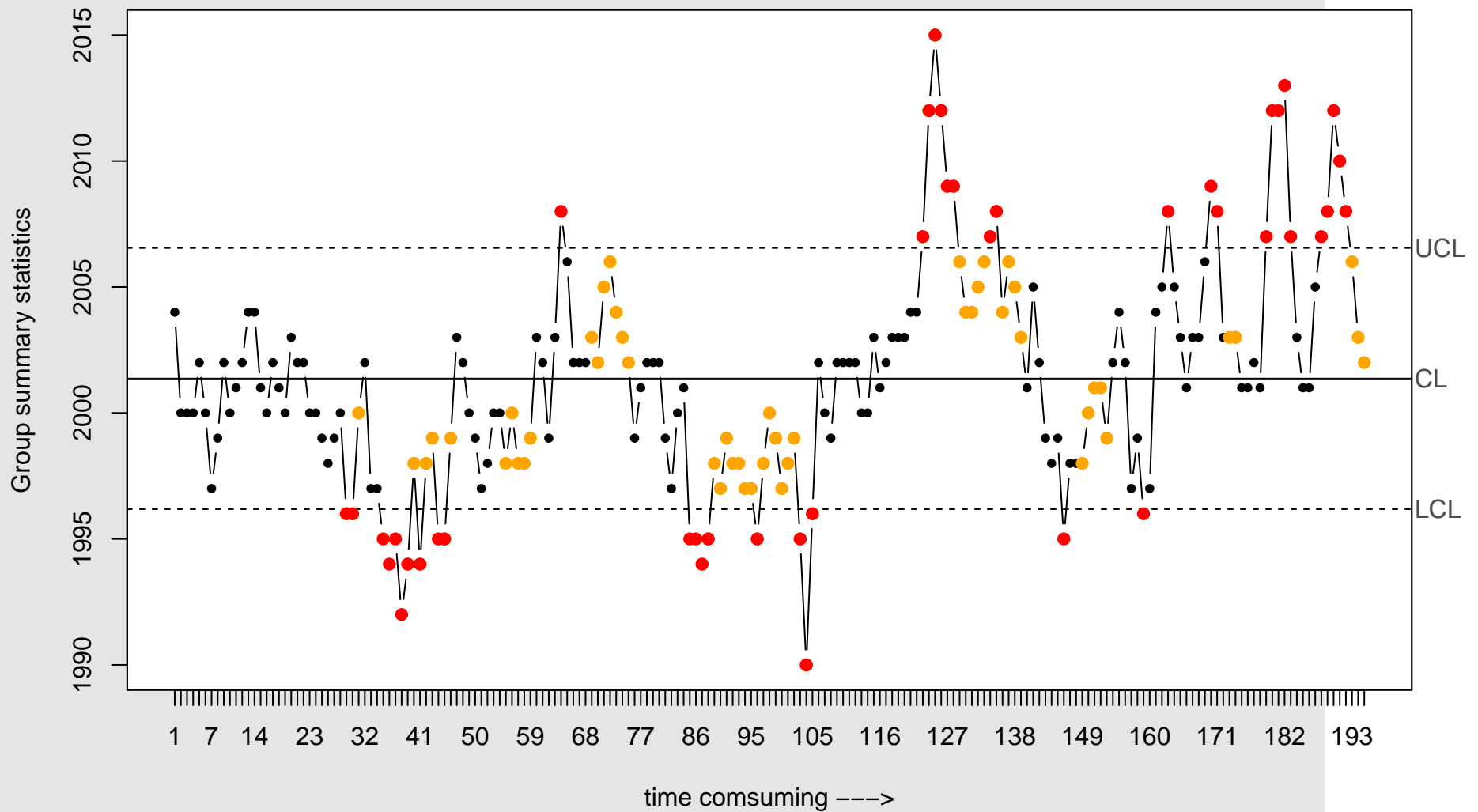
Number of groups = 195  
Center = 2002.179  
StdDev = 1.622249

LCL = 1997.313  
UCL = 2007.046

Number beyond limits = 40  
Number violating runs = 80



## 282th column point of this product



Number of groups = 195

Center = 2001.364

StdDev = 1.727352

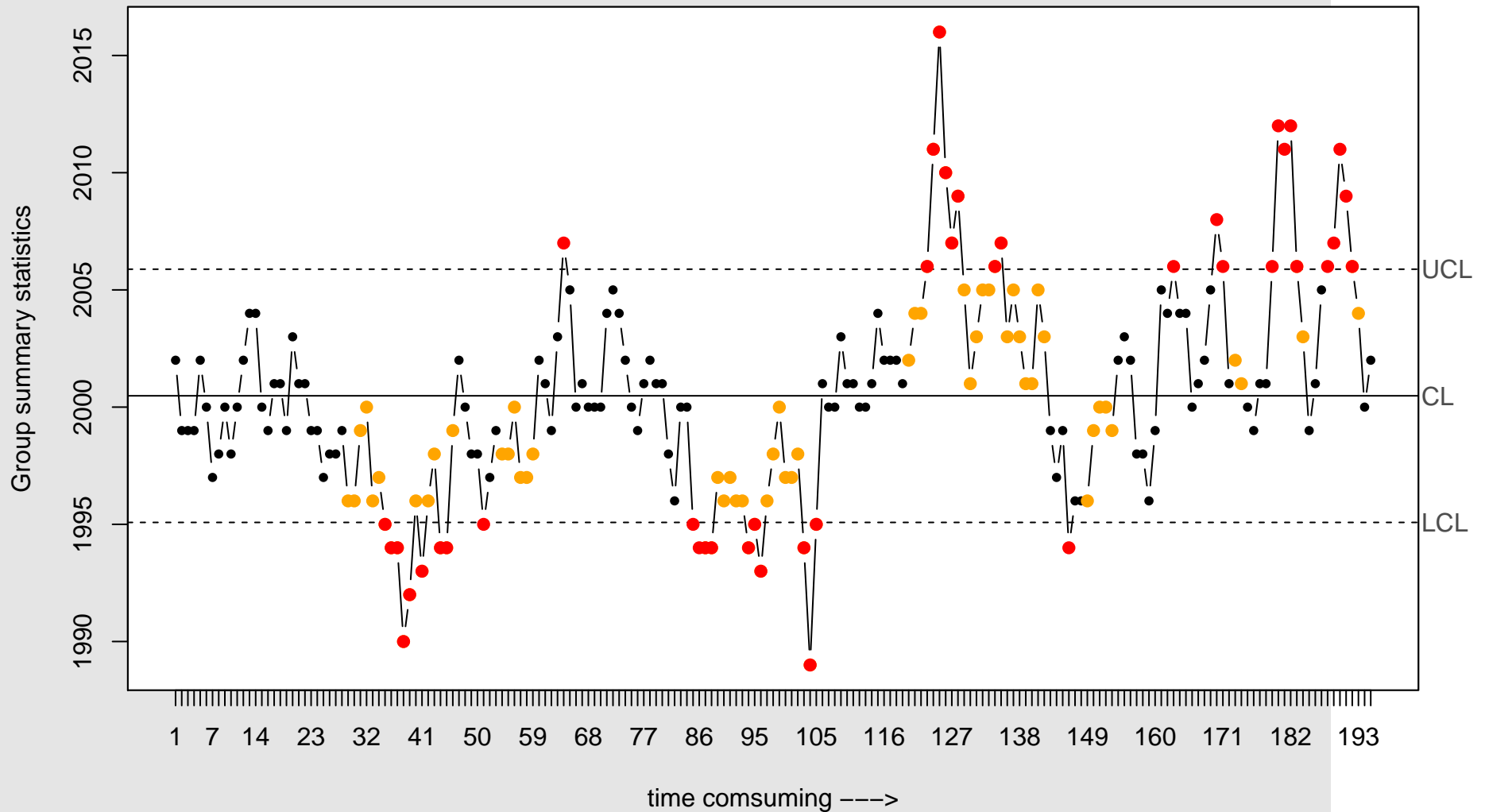
LCL = 1996.182

UCL = 2006.546

Number beyond limits = 42

Number violating runs = 69

## 283th column point of this product



Number of groups = 195

Center = 2000.482

StdDev = 1.800468

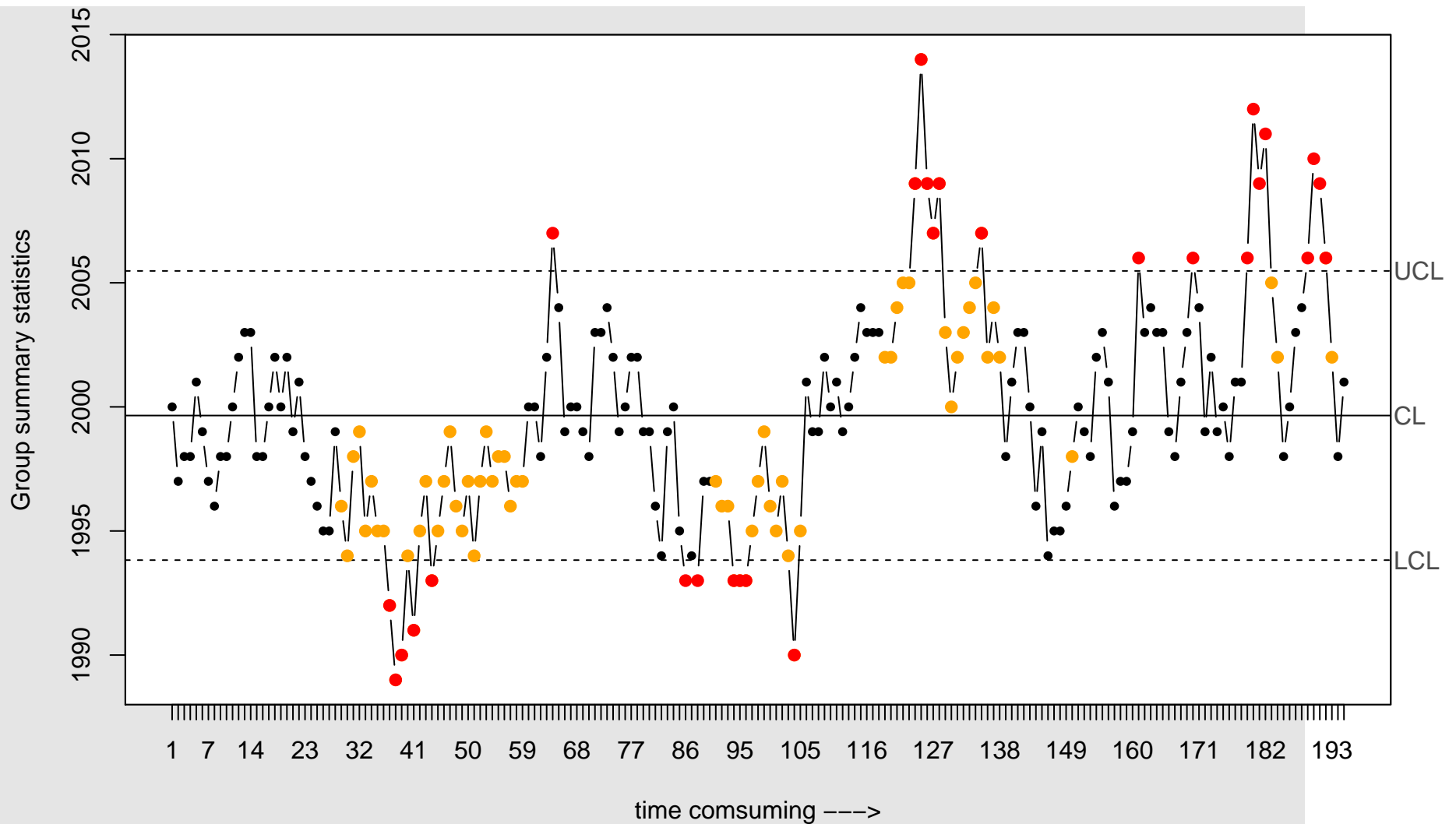
LCL = 1995.081

UCL = 2005.883

Number beyond limits = 42

Number violating runs = 77

## 284th column point of this product



Number of groups = 195

Center = 1999.651

StdDev = 1.942129

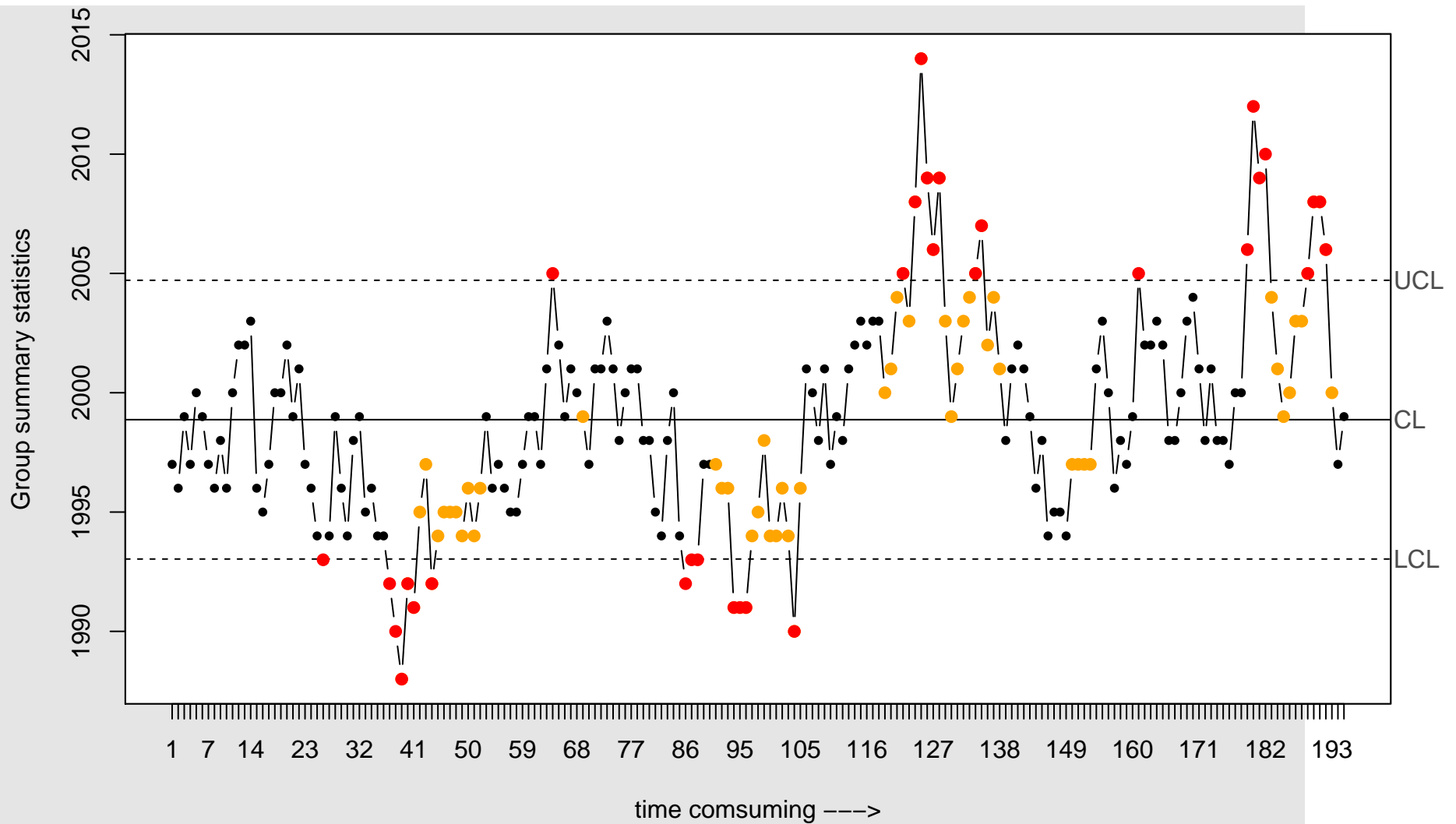
LCL = 1993.825

UCL = 2005.478

Number beyond limits = 28

Number violating runs = 71

## 285th column point of this product

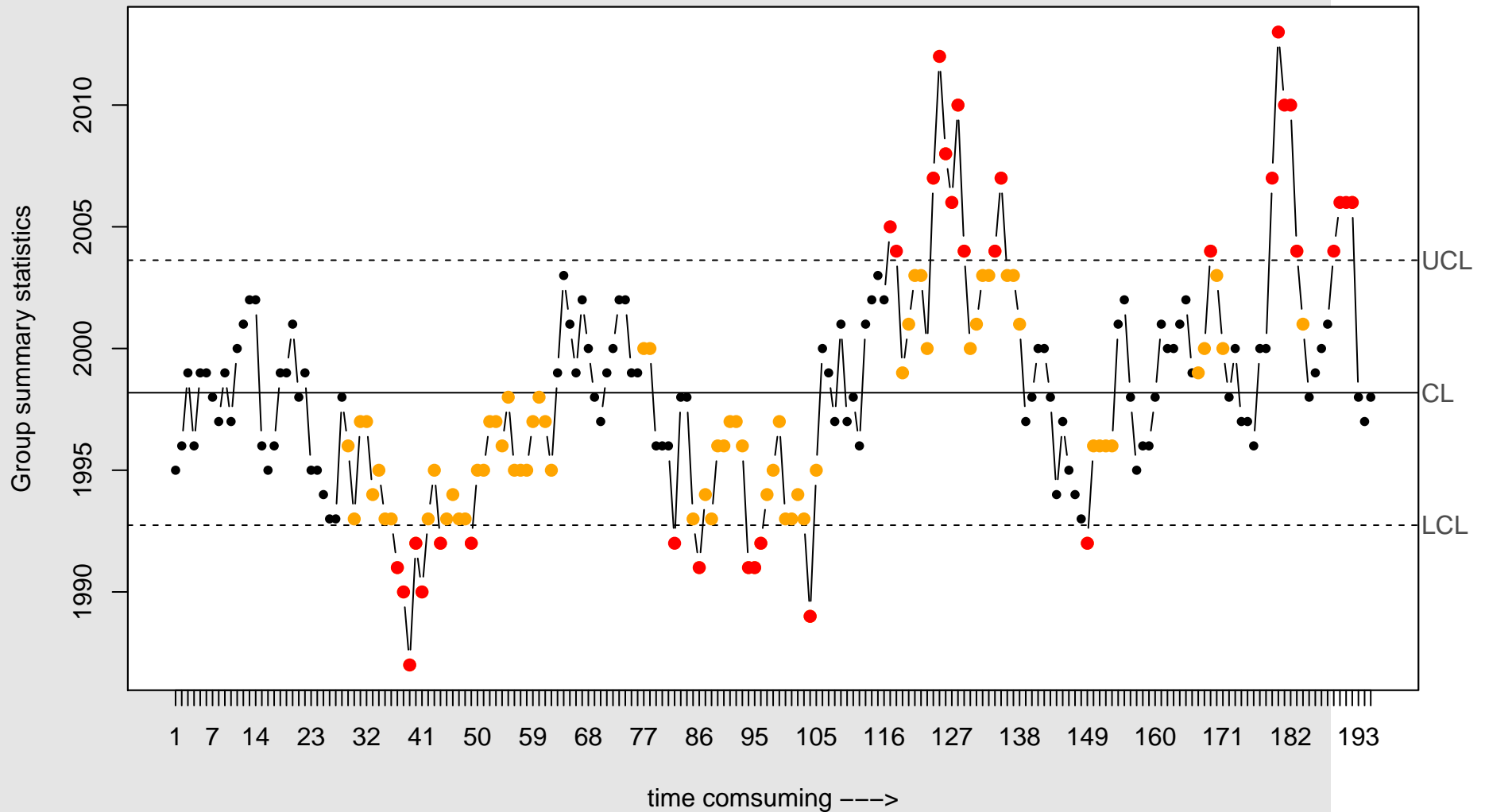


Number of groups = 195  
Center = 1998.872  
StdDev = 1.946699

LCL = 1993.032  
UCL = 2004.712

Number beyond limits = 32  
Number violating runs = 65

## 286th column point of this product

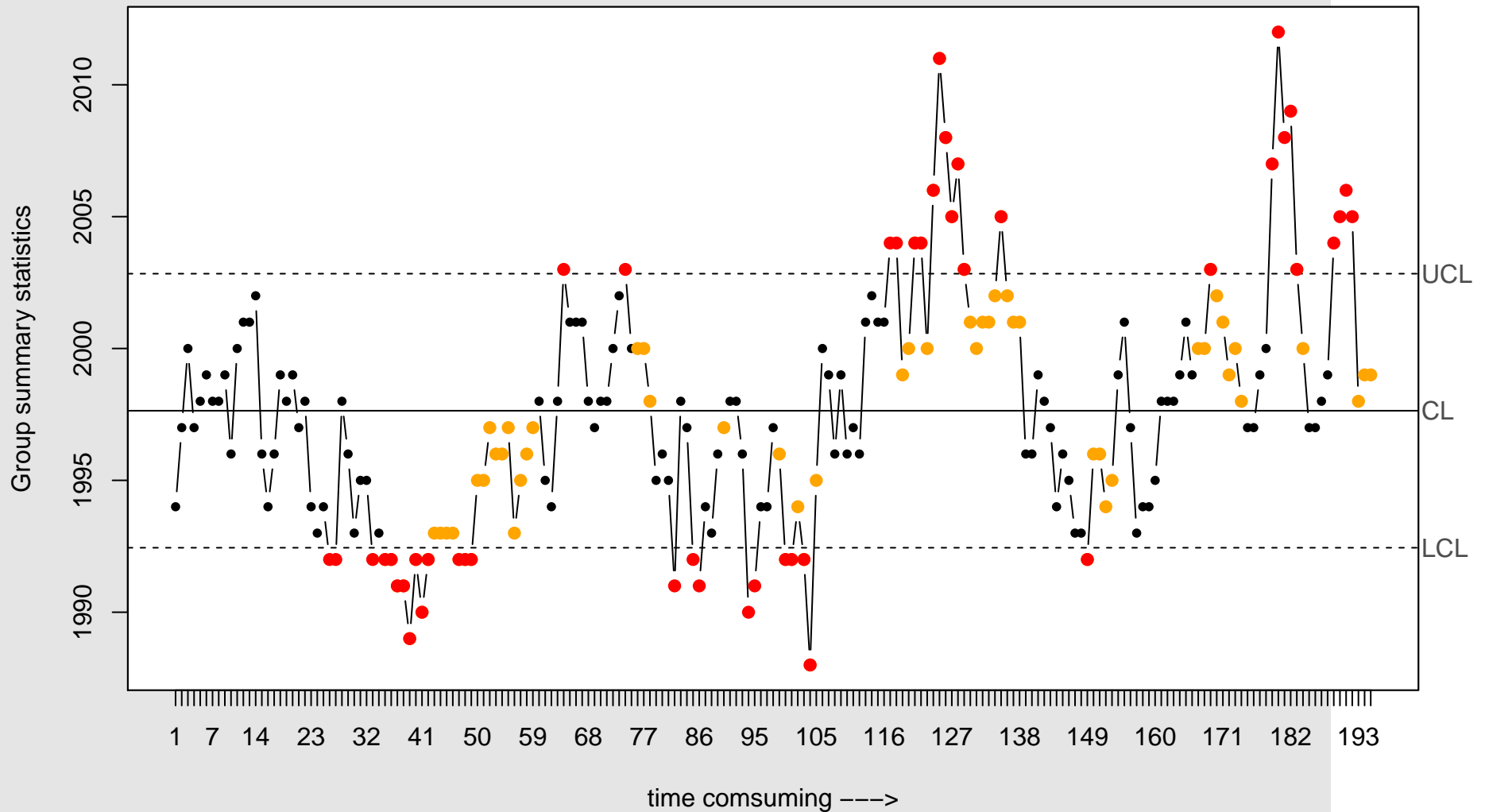


Number of groups = 195  
 Center = 1998.185  
 StdDev = 1.814177

LCL = 1992.742  
 UCL = 2003.627

Number beyond limits = 34  
 Number violating runs = 90

## 287th column point of this product

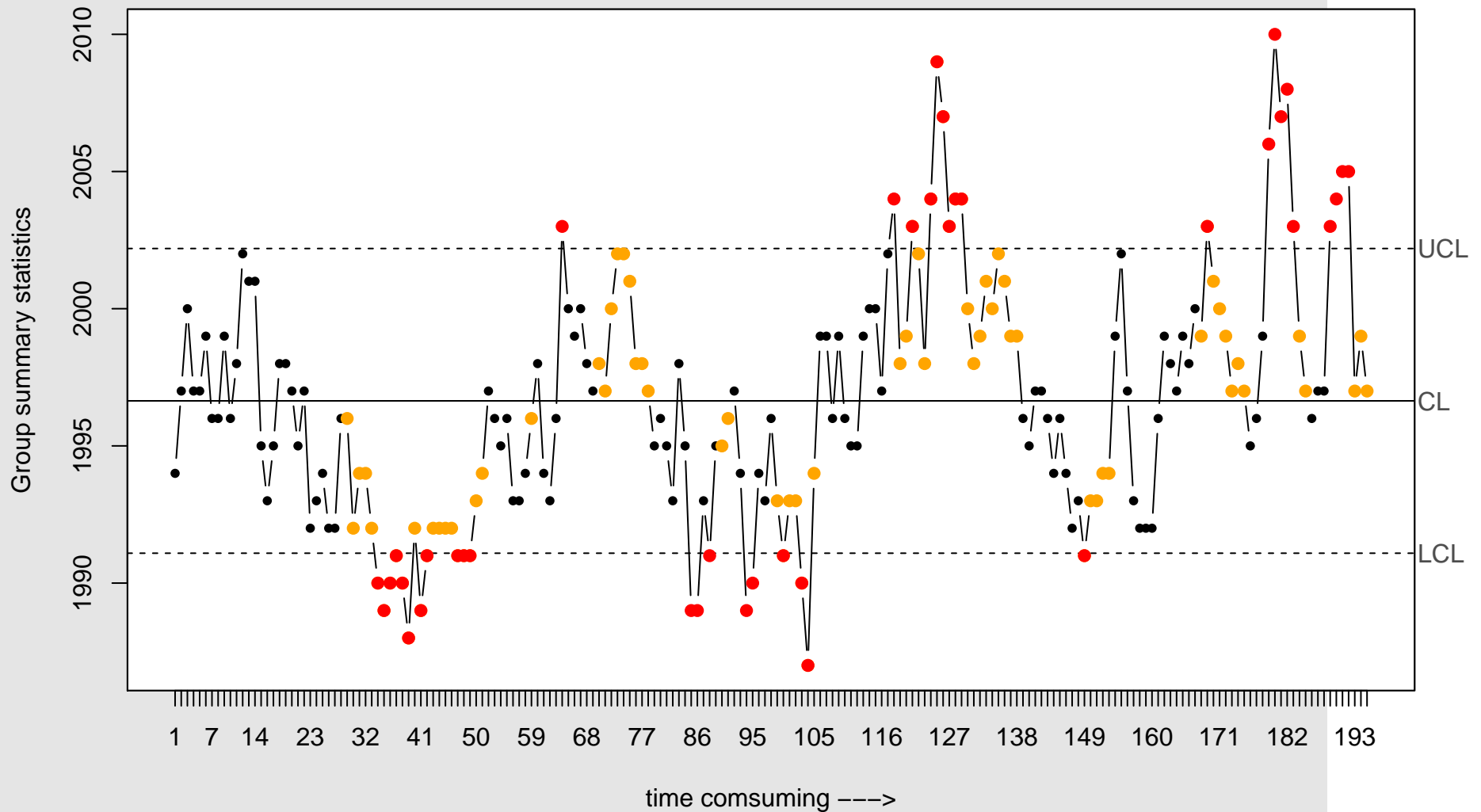


Number of groups = 195  
 Center = 1997.641  
 StdDev = 1.731922

LCL = 1992.445  
 UCL = 2002.837

Number beyond limits = 47  
 Number violating runs = 74

## 288th column point of this product

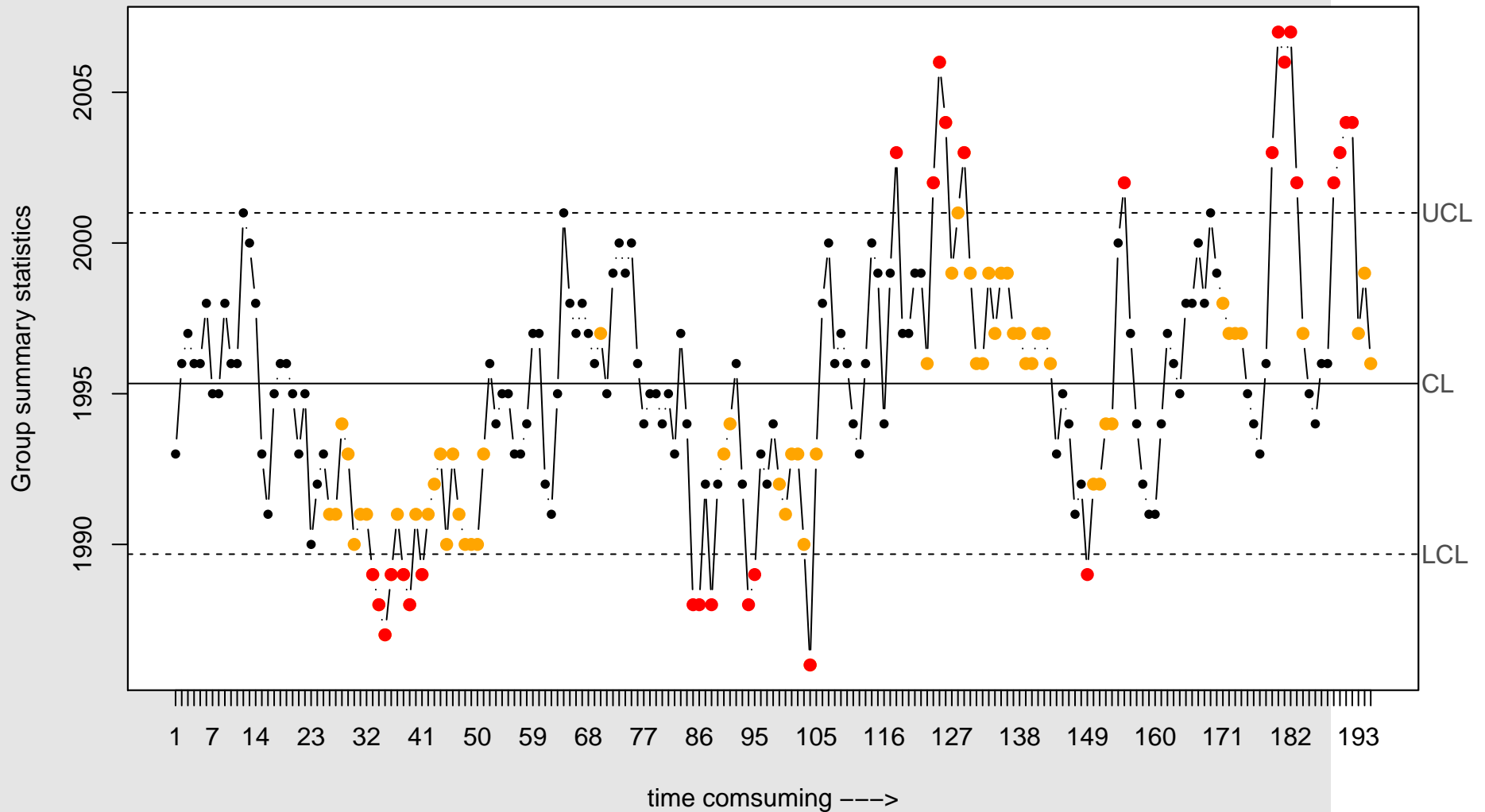


Number of groups = 195  
Center = 1996.641  
StdDev = 1.850735

LCL = 1991.089  
UCL = 2002.193

Number beyond limits = 39  
Number violating runs = 80

## 289th column point of this product



Number of groups = 195

Center = 1995.338

StdDev = 1.887293

LCL = 1989.677

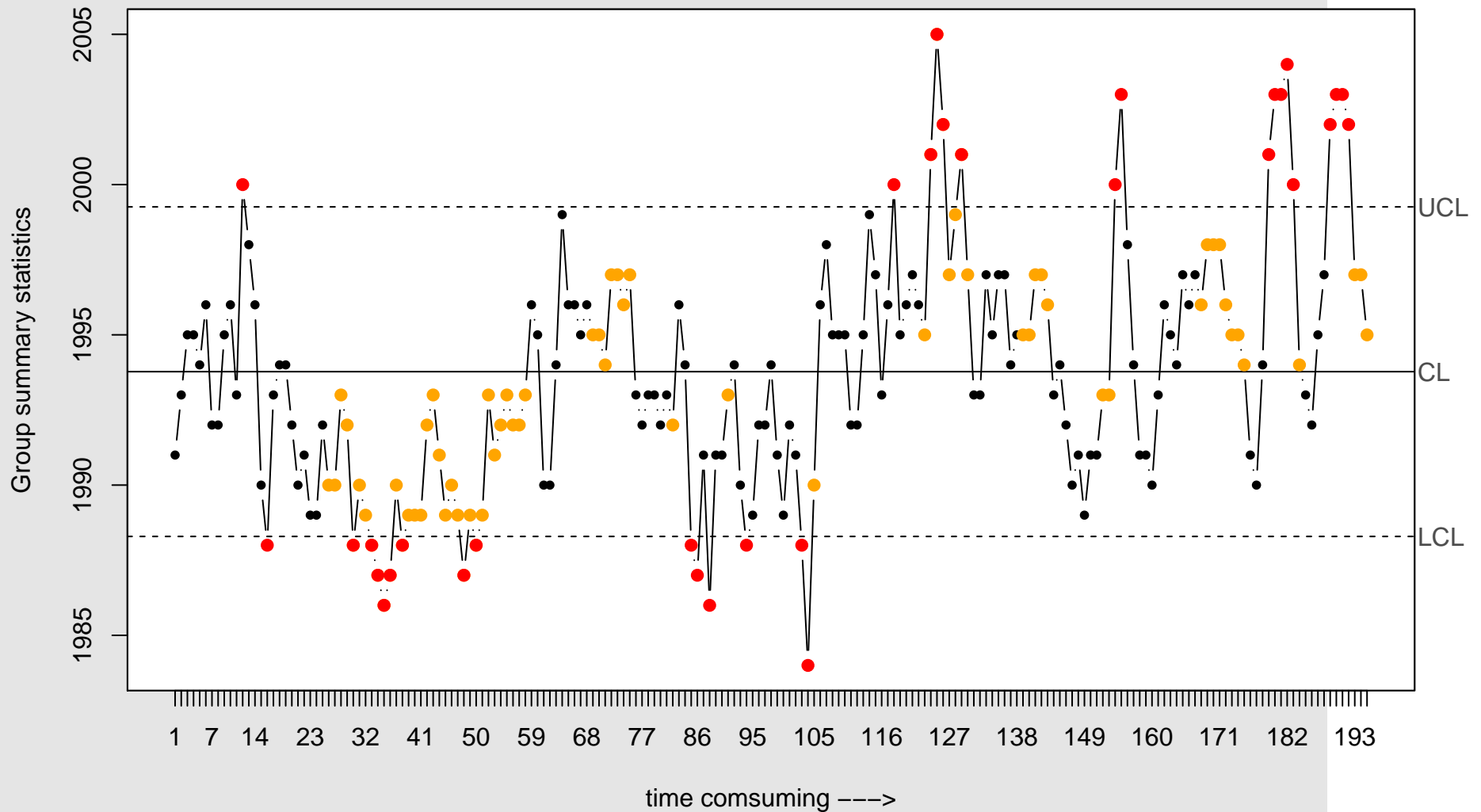
UCL = 2001

Number beyond limits = 29

Number violating runs = 69



## 290th column point of this product

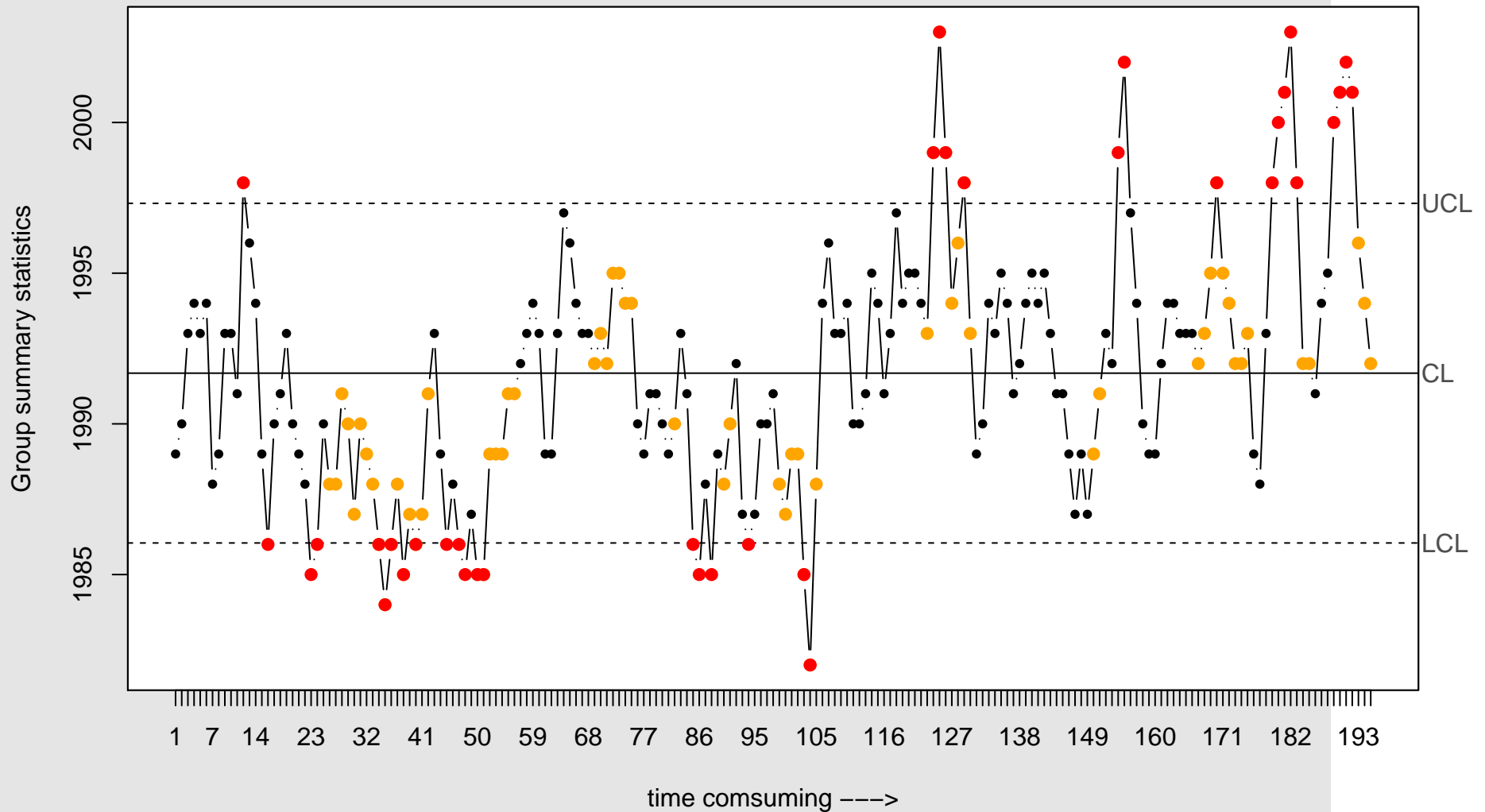


Number of groups = 195  
Center = 1993.774  
StdDev = 1.827886

LCL = 1988.291  
UCL = 1999.258

Number beyond limits = 32  
Number violating runs = 70

## 291th column point of this product

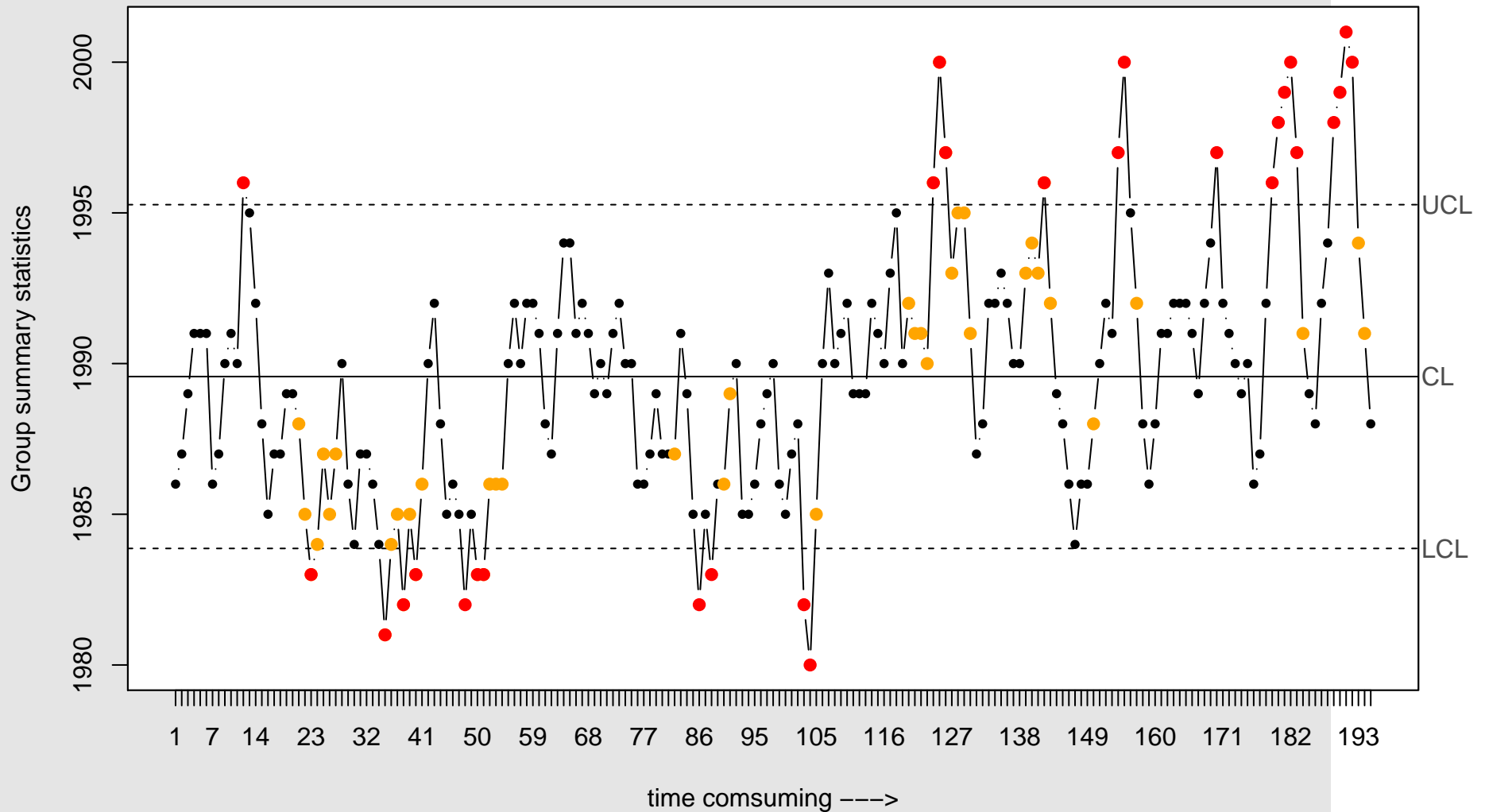


Number of groups = 195  
Center = 1991.682  
StdDev = 1.878153

LCL = 1986.048  
UCL = 1997.317

Number beyond limits = 36  
Number violating runs = 65

## 292th column point of this product

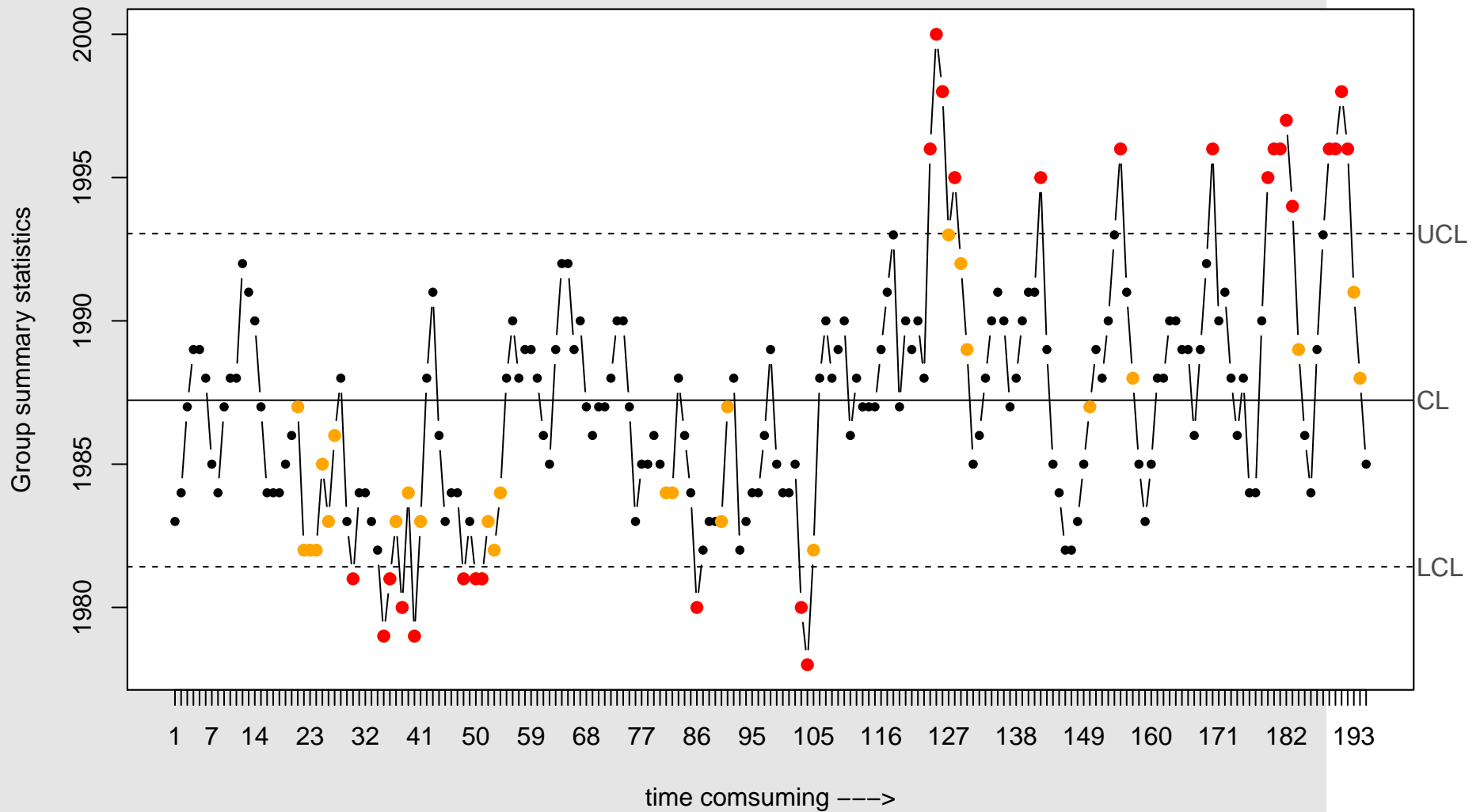


Number of groups = 195  
Center = 1989.569  
StdDev = 1.901002

LCL = 1983.866  
UCL = 1995.272

Number beyond limits = 28  
Number violating runs = 44

## 293th column point of this product



Number of groups = 195

Center = 1987.231

StdDev = 1.937559

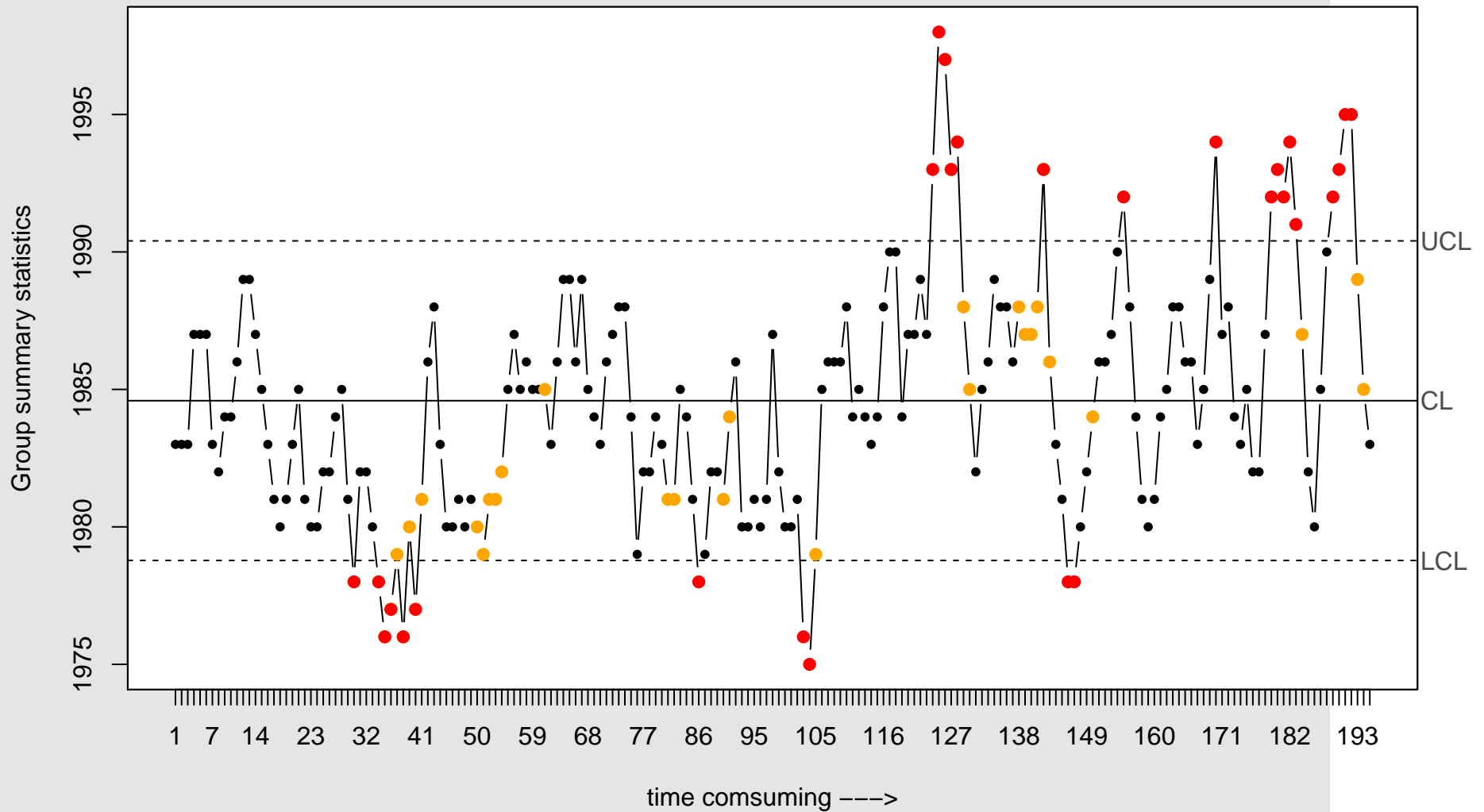
LCL = 1981.418

UCL = 1993.043

Number beyond limits = 27

Number violating runs = 34

## 294th column point of this product



Number of groups = 195

Center = 1984.59

StdDev = 1.937559

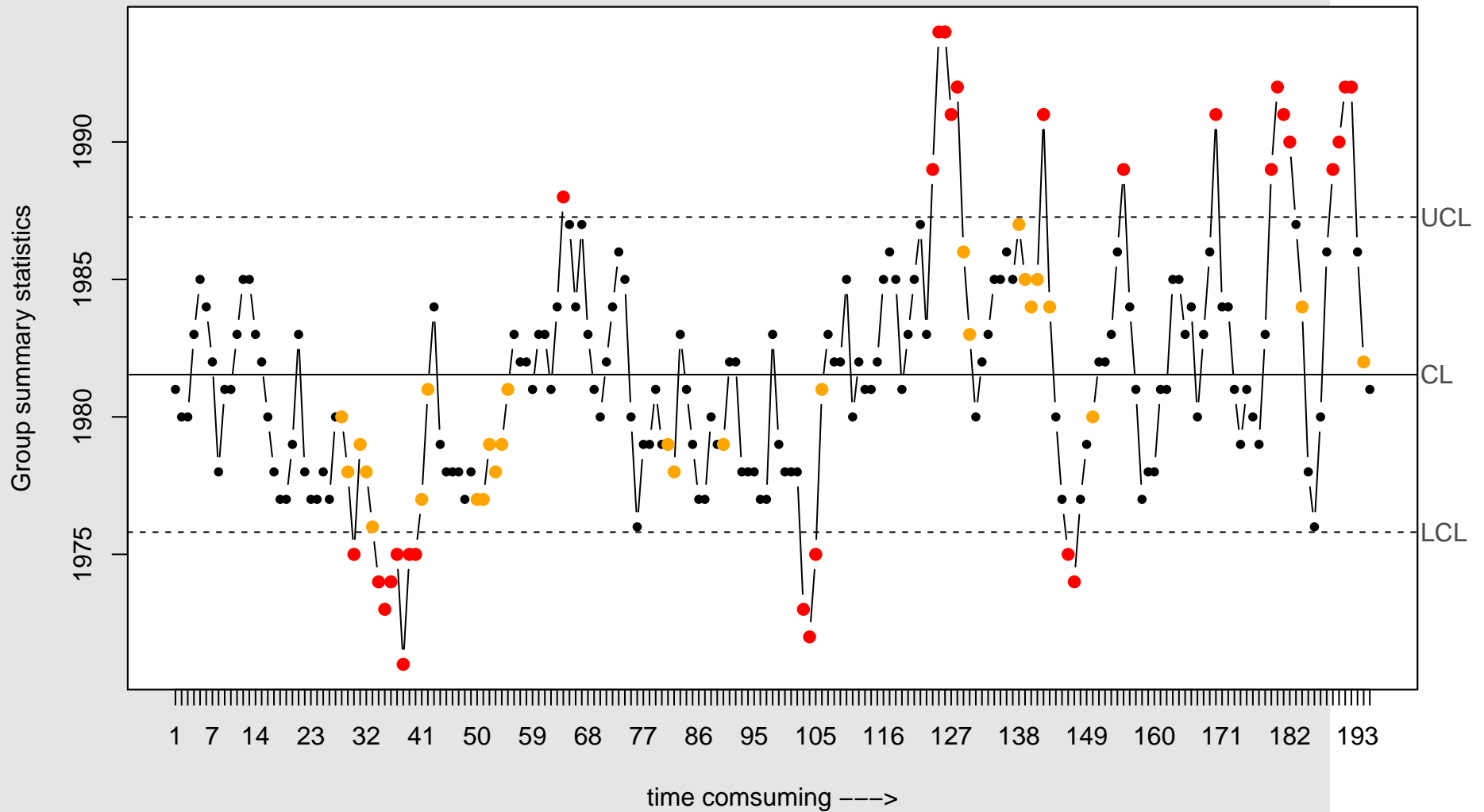
LCL = 1978.777

UCL = 1990.402

Number beyond limits = 28

Number violating runs = 33

## 295th column point of this product



Number of groups = 195

Center = 1981.538

StdDev = 1.910141

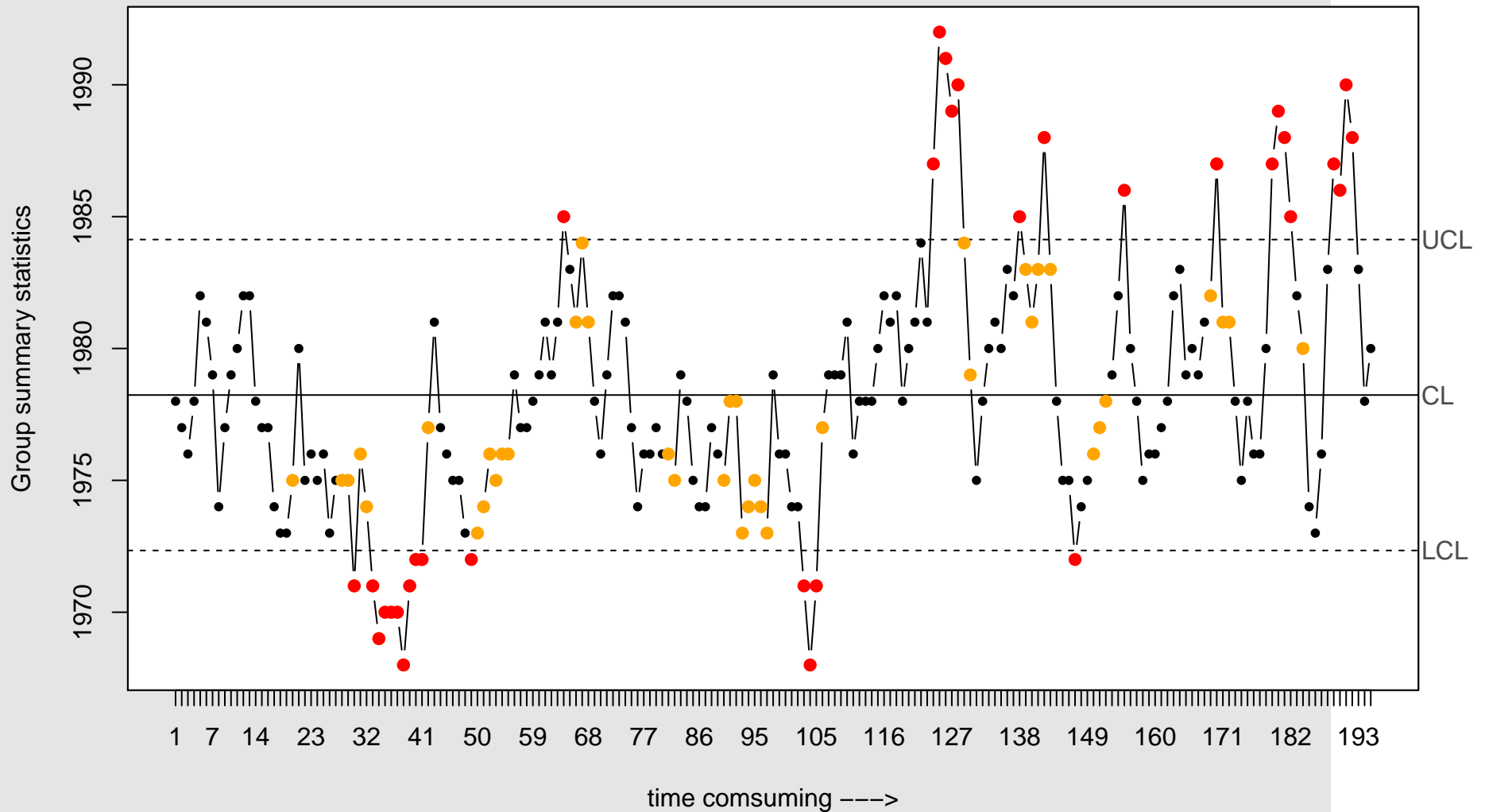
LCL = 1975.808

UCL = 1987.269

Number beyond limits = 30

Number violating runs = 40

## 296th column point of this product



Number of groups = 195

Center = 1978.236

StdDev = 1.964978

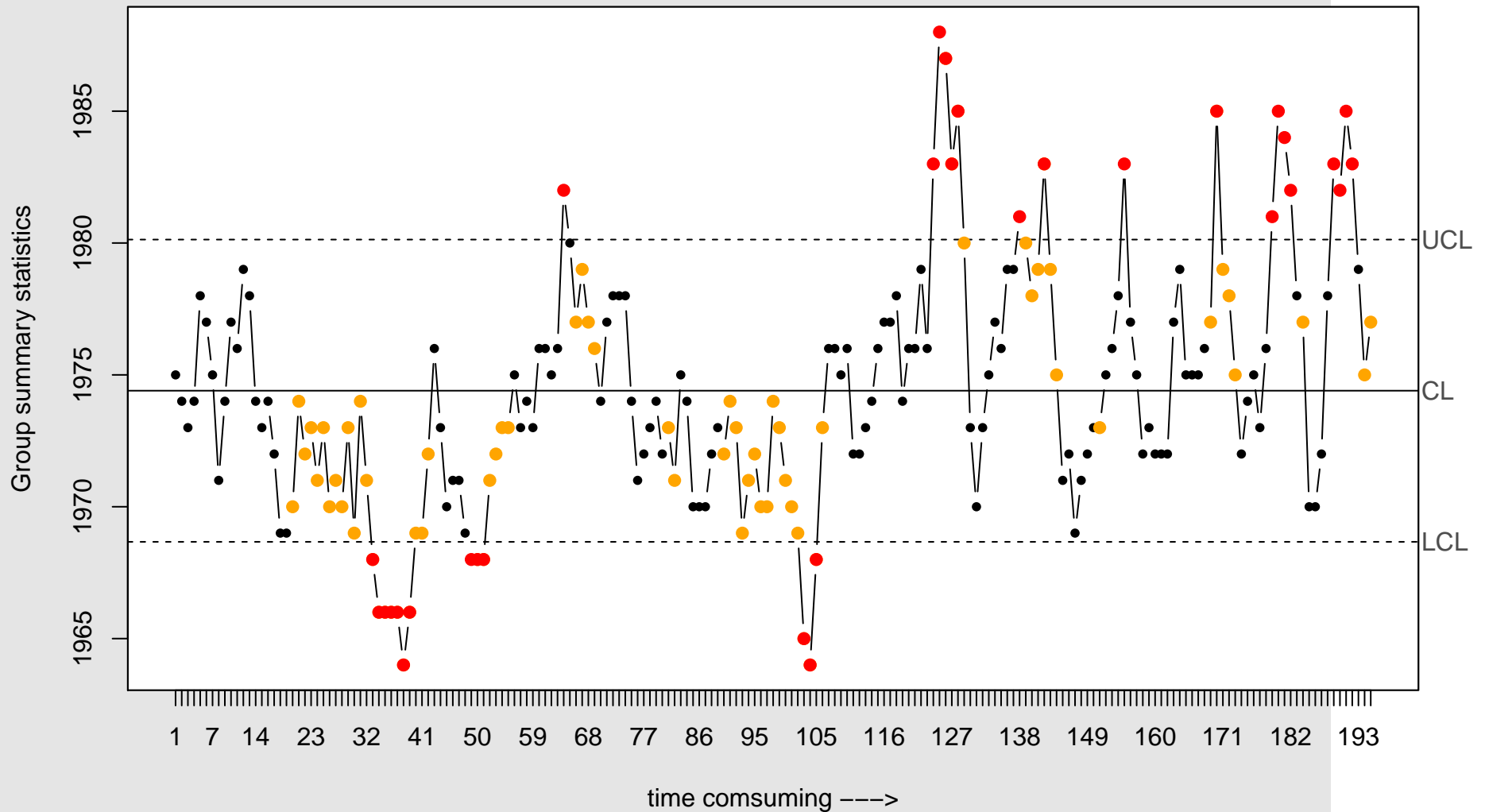
LCL = 1972.341

UCL = 1984.131

Number beyond limits = 33

Number violating runs = 55

## 297th column point of this product



Number of groups = 195

Center = 1974.4

StdDev = 1.910141

LCL = 1968.67

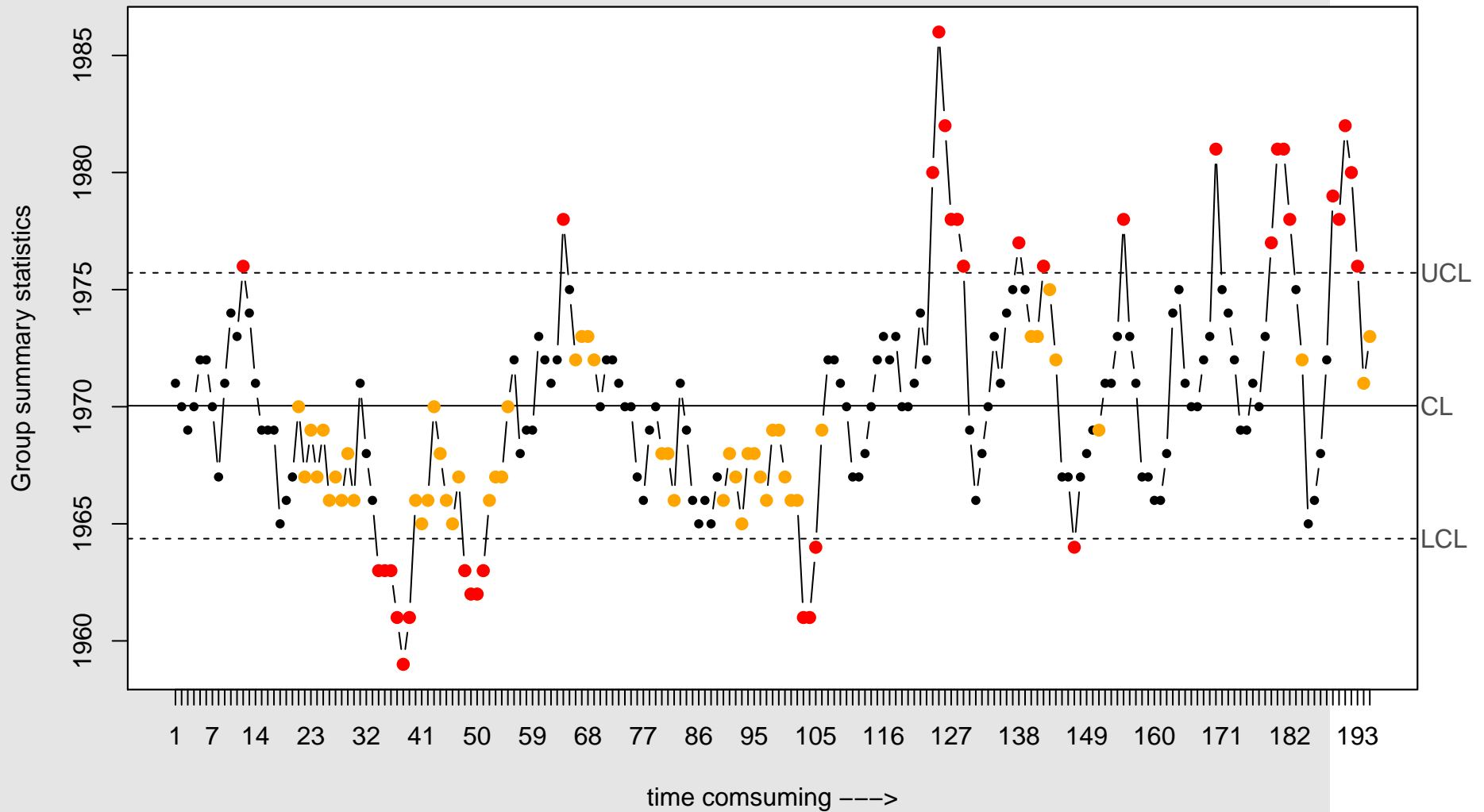
UCL = 1980.13

Number beyond limits = 31

Number violating runs = 71



## 298th column point of this product

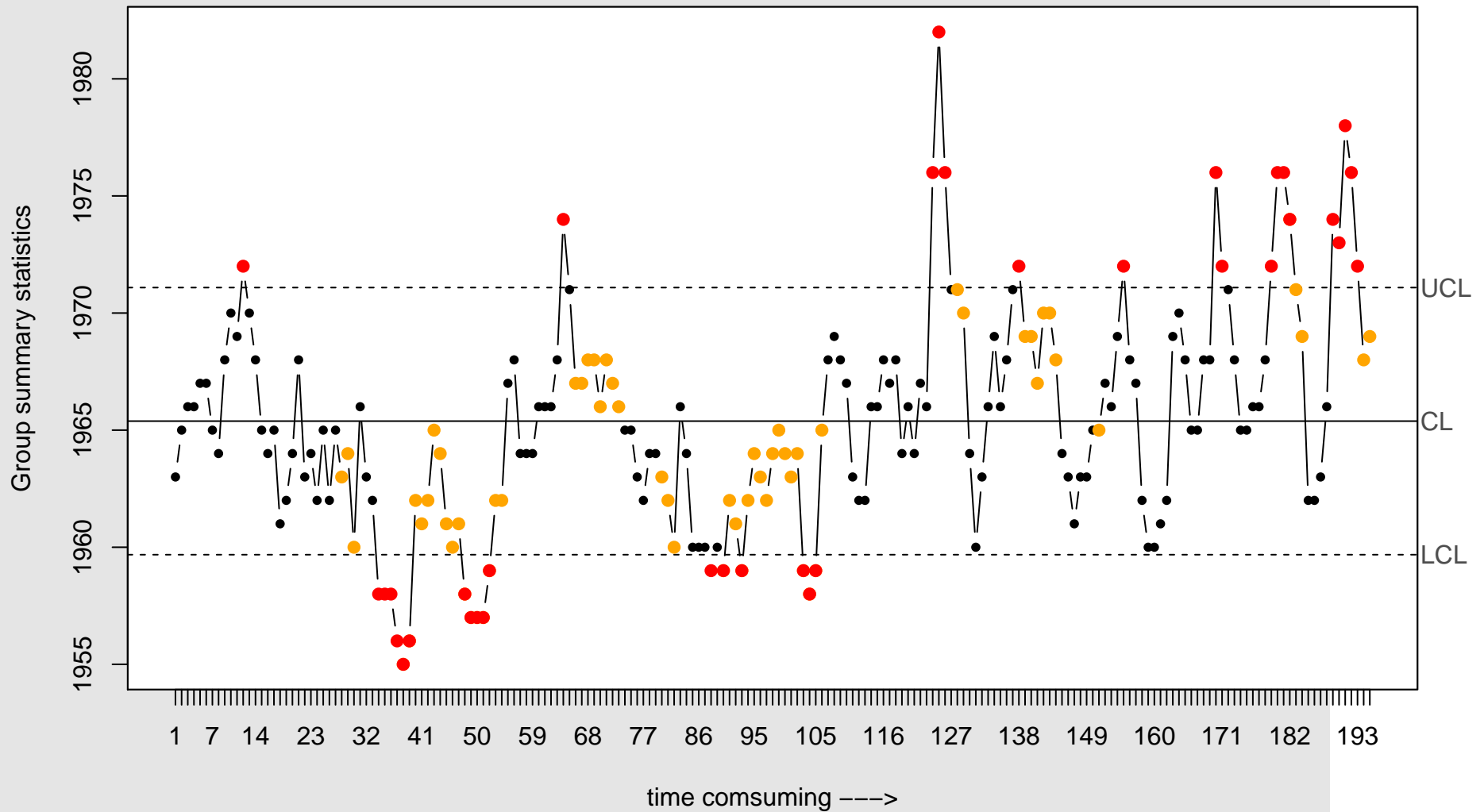


Number of groups = 195  
Center = 1970.041  
StdDev = 1.891862

LCL = 1964.365  
UCL = 1975.717

Number beyond limits = 35  
Number violating runs = 64

## 299th column point of this product



Number of groups = 195

Center = 1965.385

StdDev = 1.901002

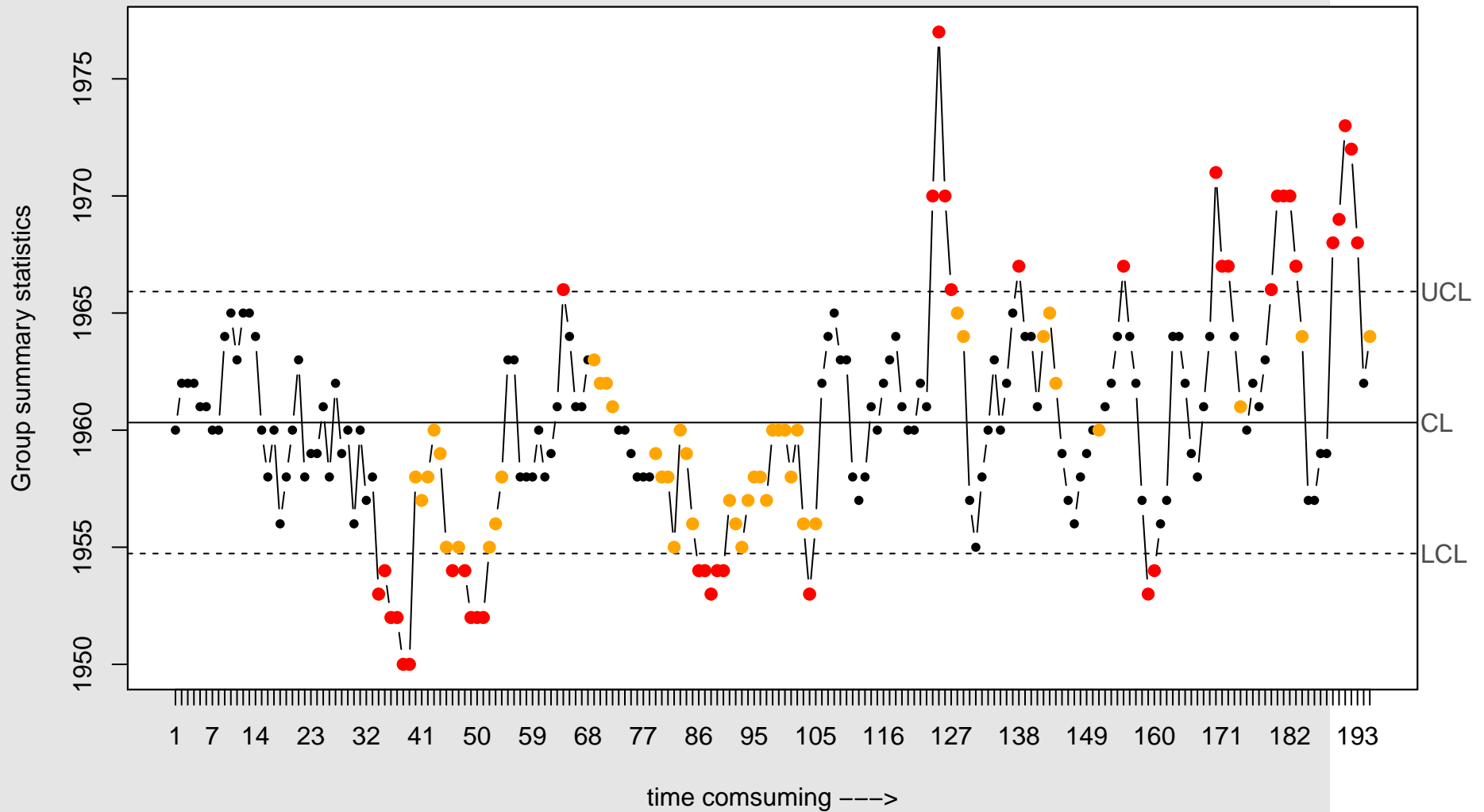
LCL = 1959.682

UCL = 1971.088

Number beyond limits = 35

Number violating runs = 62

### 300th column point of this product

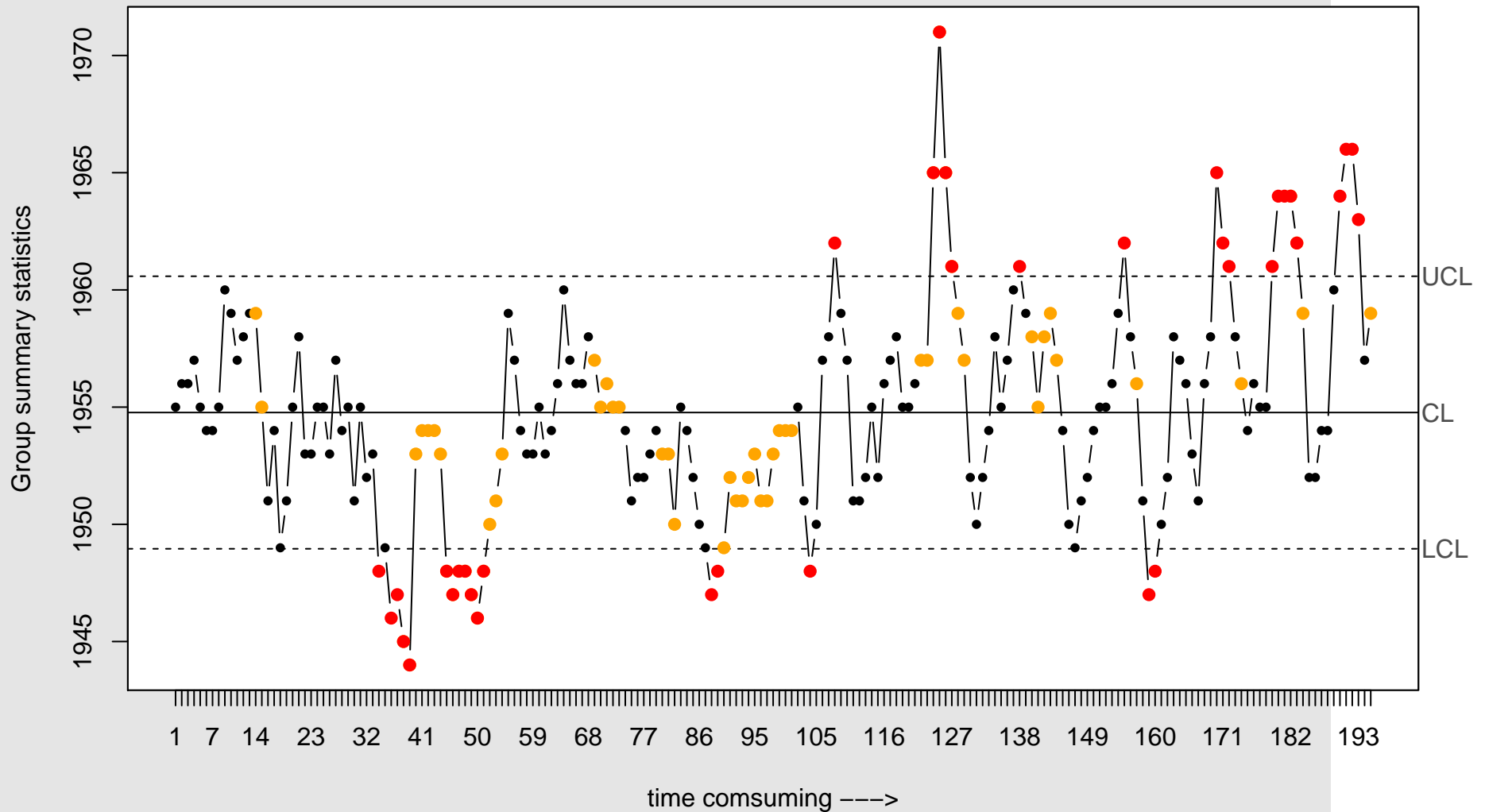


Number of groups = 195  
Center = 1960.323  
StdDev = 1.864444

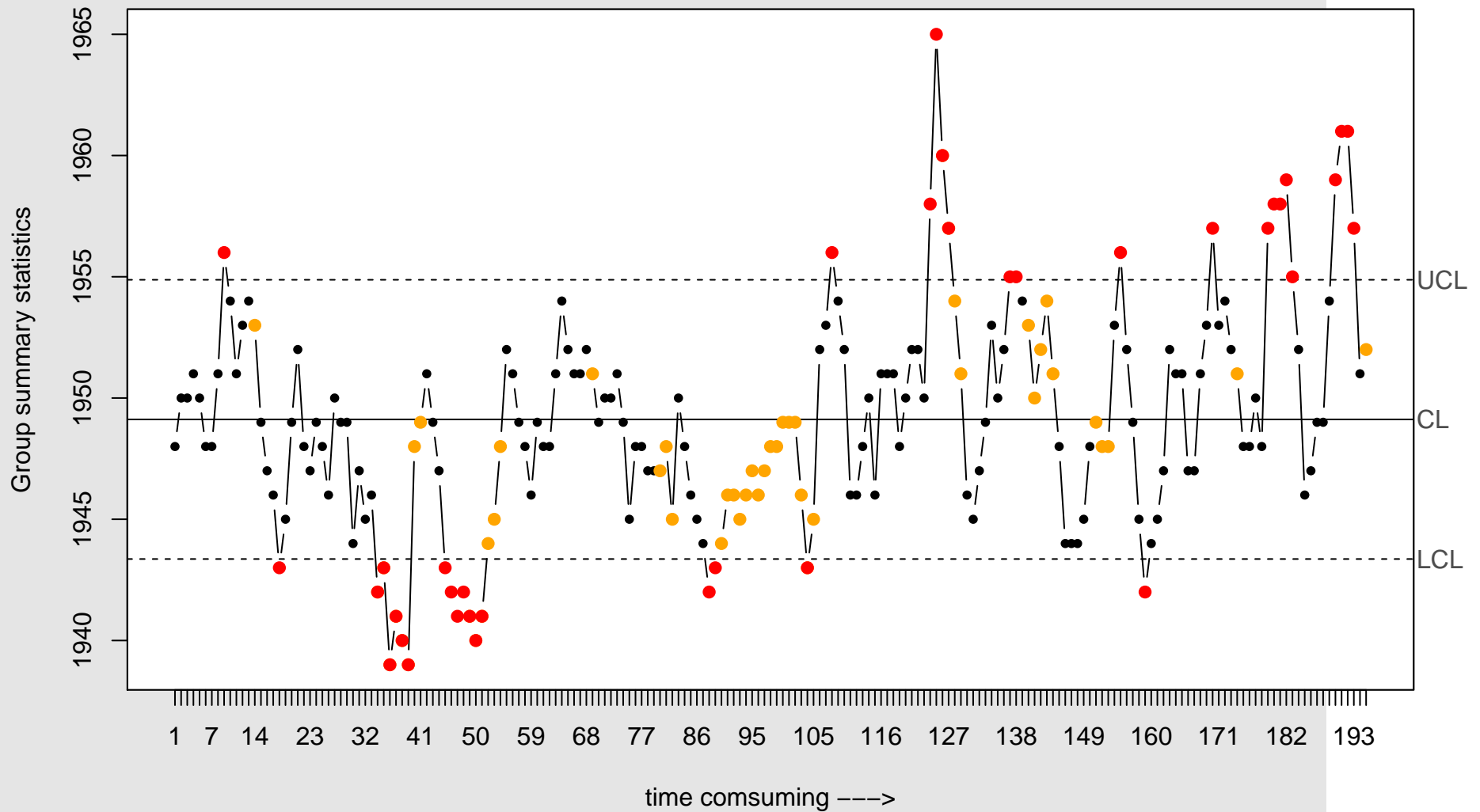
LCL = 1954.73  
UCL = 1965.916

Number beyond limits = 39  
Number violating runs = 63

### 301th column point of this product



### 302th column point of this product

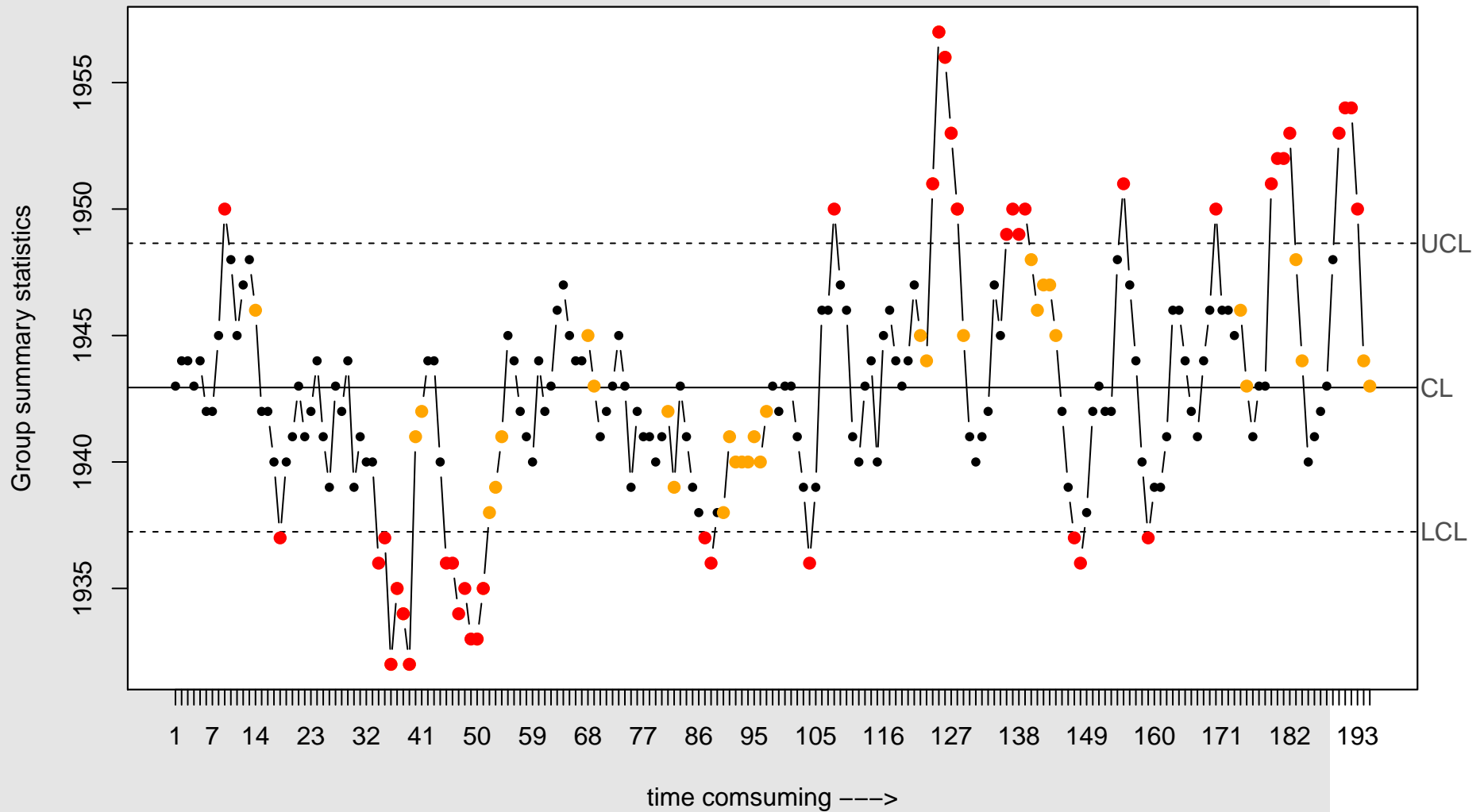


Number of groups = 195  
Center = 1949.118  
StdDev = 1.919281

LCL = 1943.36  
UCL = 1954.876

Number beyond limits = 37  
Number violating runs = 49

### 303th column point of this product



Number of groups = 195

Center = 1942.944

StdDev = 1.901002

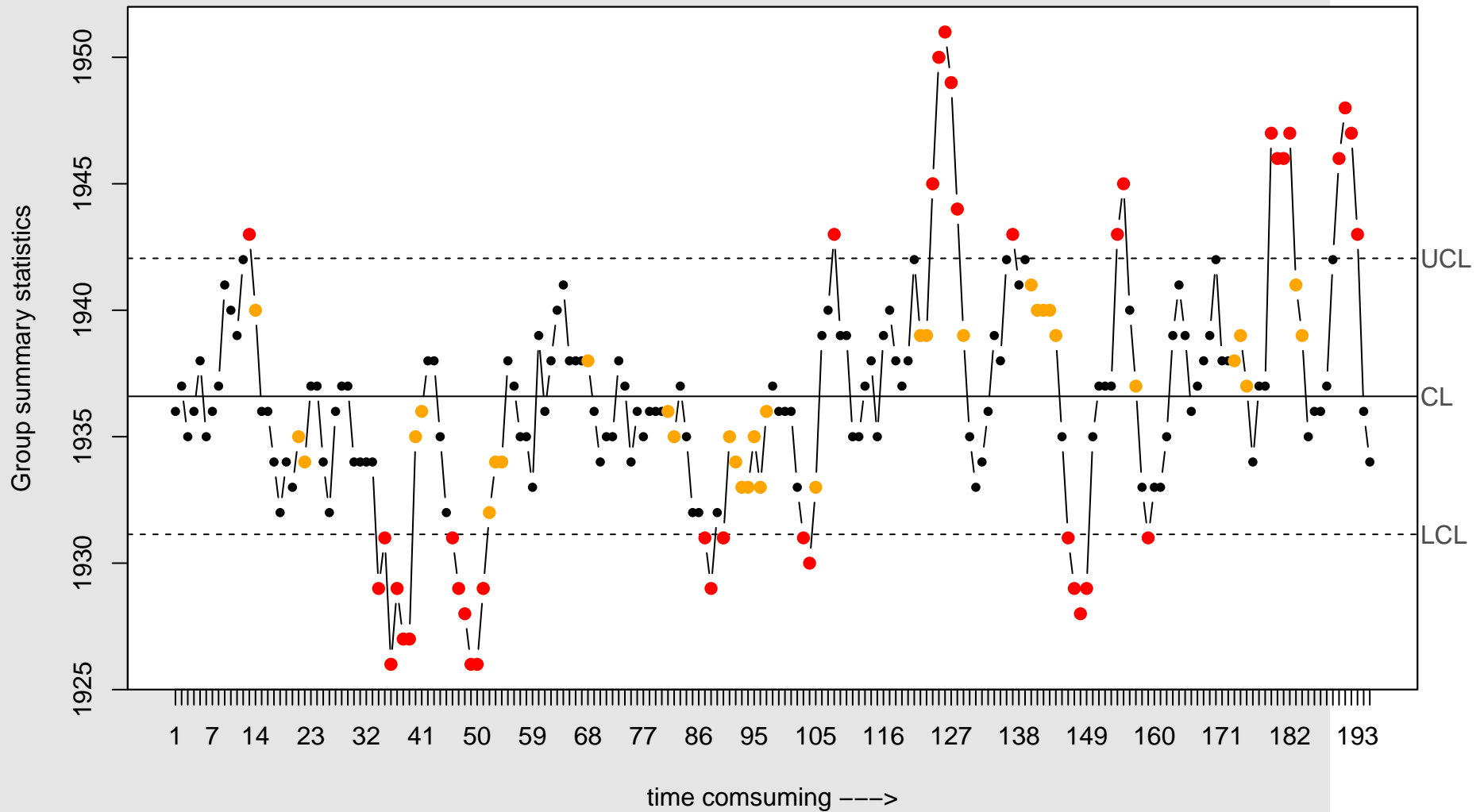
LCL = 1937.241

UCL = 1948.647

Number beyond limits = 41

Number violating runs = 43

### 304th column point of this product

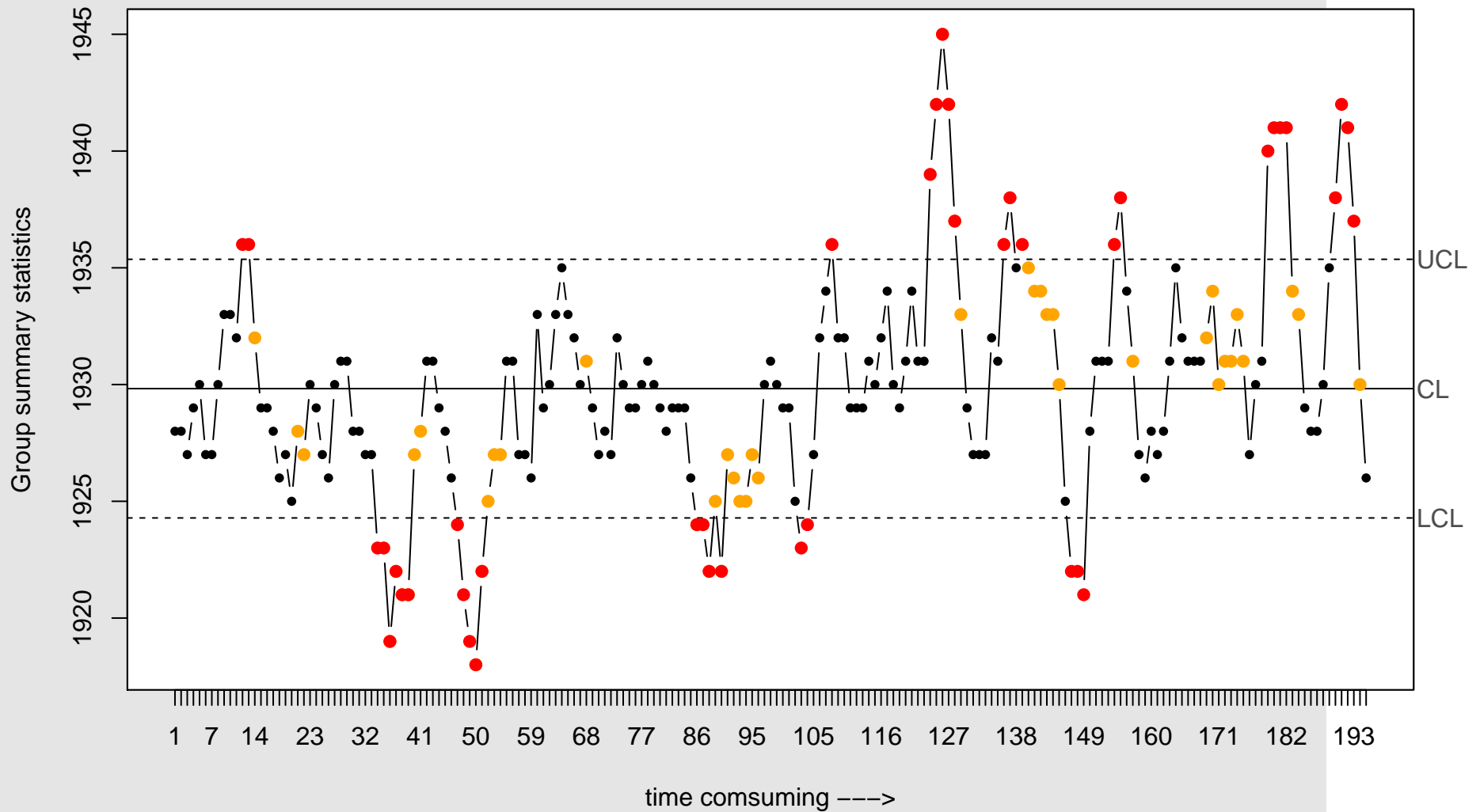


Number of groups = 195  
 Center = 1936.595  
 StdDev = 1.818747

LCL = 1931.139  
 UCL = 1942.051

Number beyond limits = 40  
 Number violating runs = 45

### 305th column point of this product



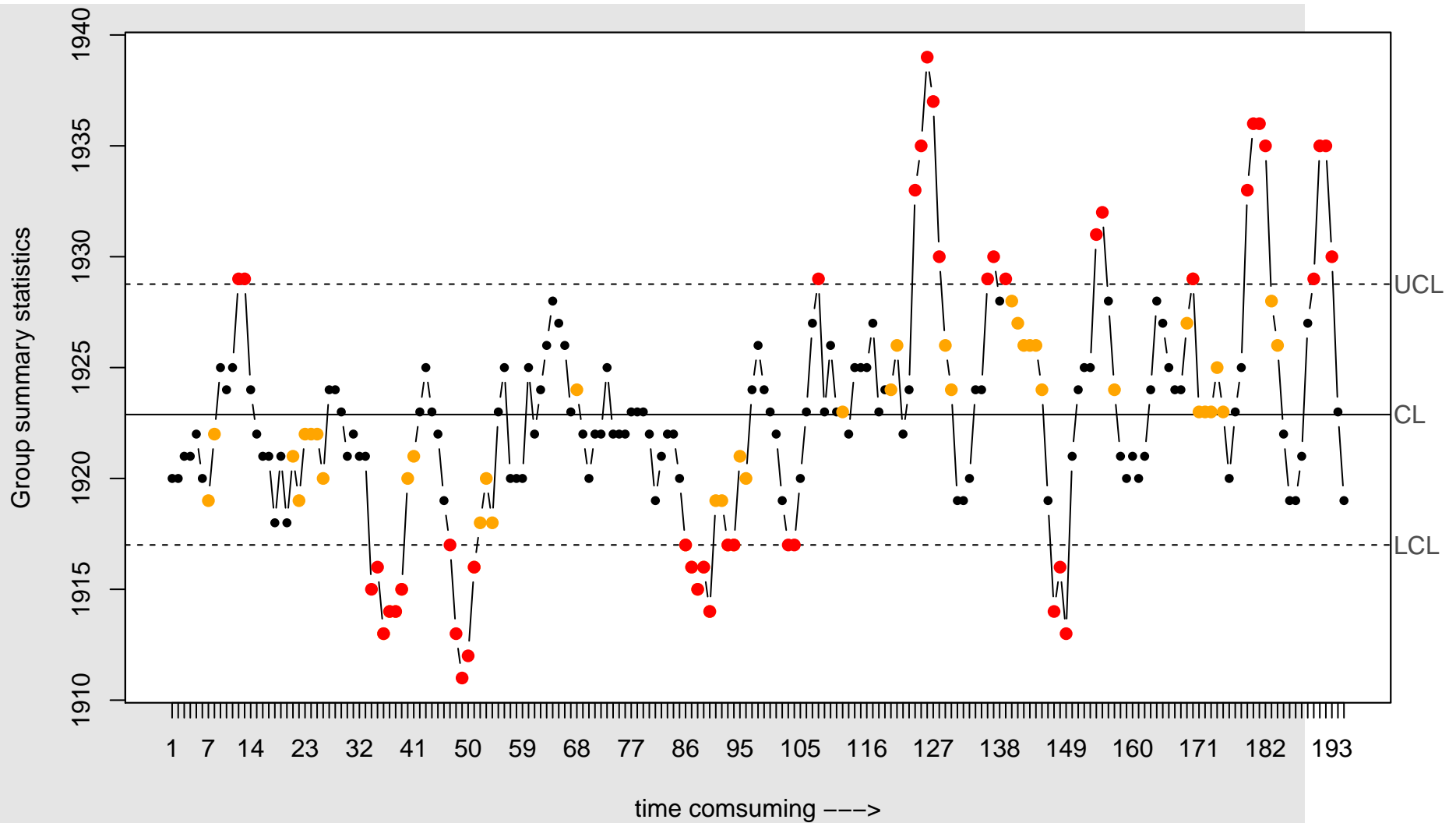
Number of groups = 195  
 Center = 1929.826  
 StdDev = 1.846165

LCL = 1924.287  
 UCL = 1935.364

Number beyond limits = 41  
 Number violating runs = 47



### 306th column point of this product

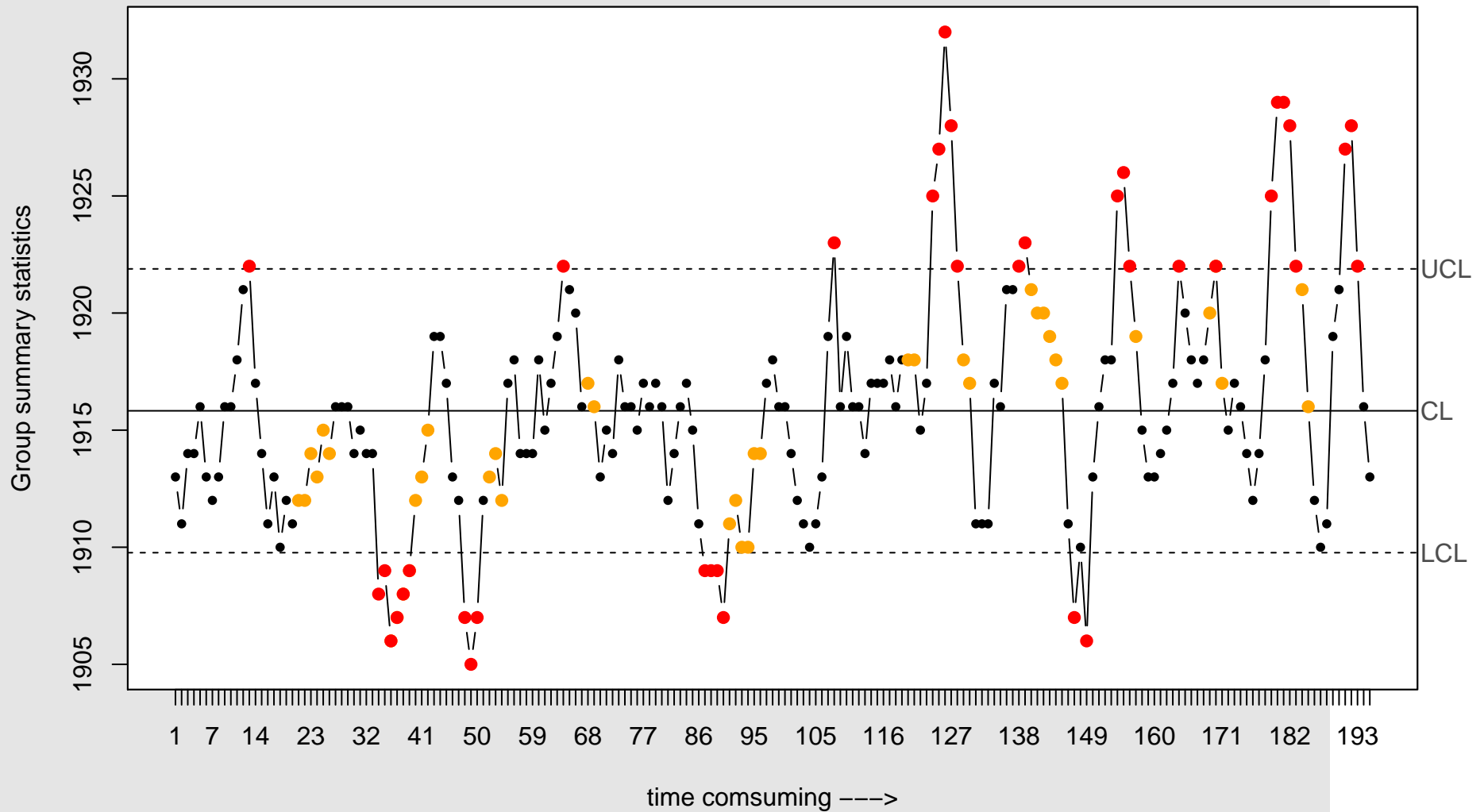


Number of groups = 195  
 Center = 1922.882  
 StdDev = 1.960408

LCL = 1917.001  
 UCL = 1928.763

Number beyond limits = 45  
 Number violating runs = 51

### 307th column point of this product



Number of groups = 195

Center = 1915.826

StdDev = 2.019814

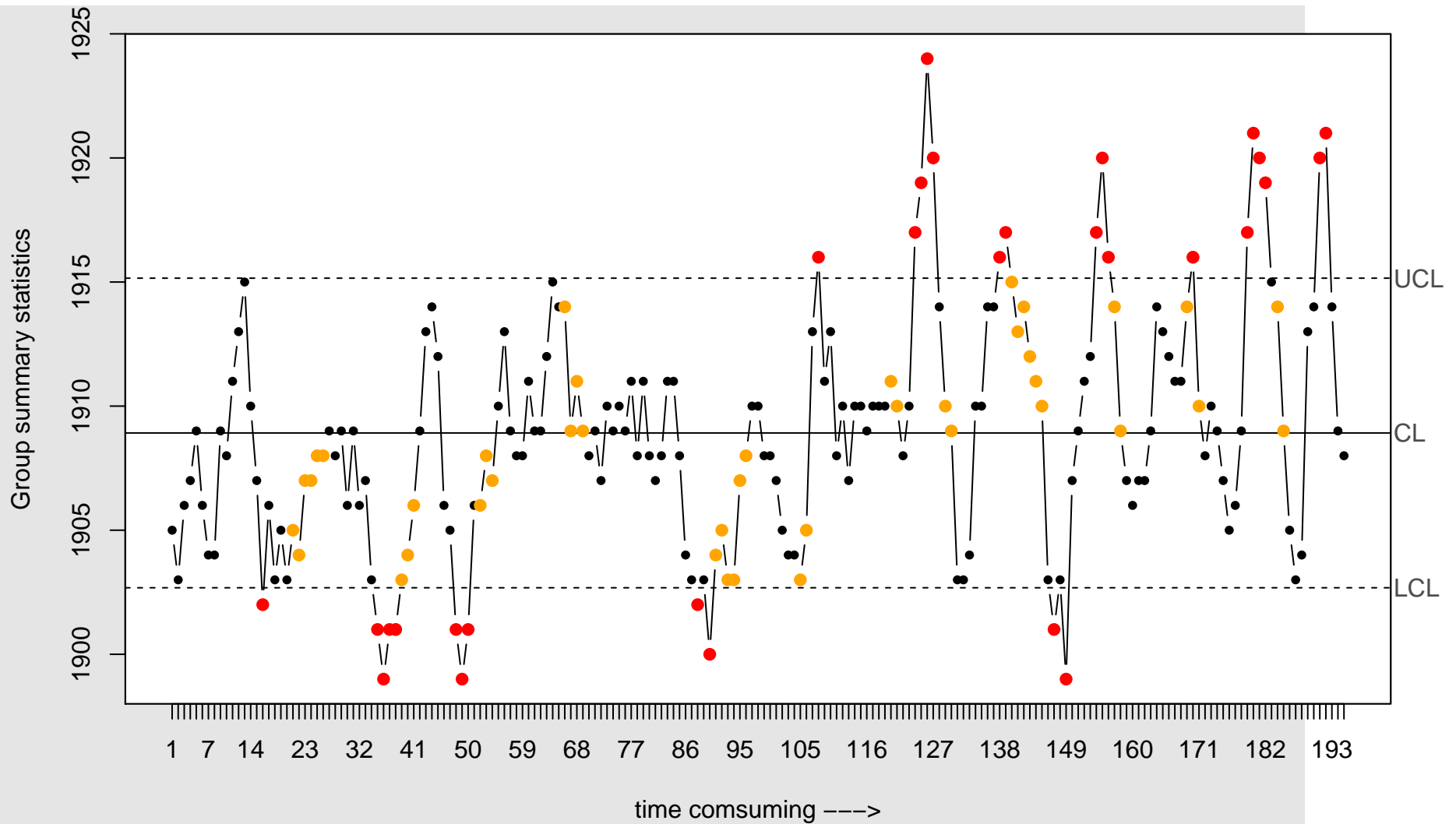
LCL = 1909.766

UCL = 1921.885

Number beyond limits = 38

Number violating runs = 40

### 308th column point of this product

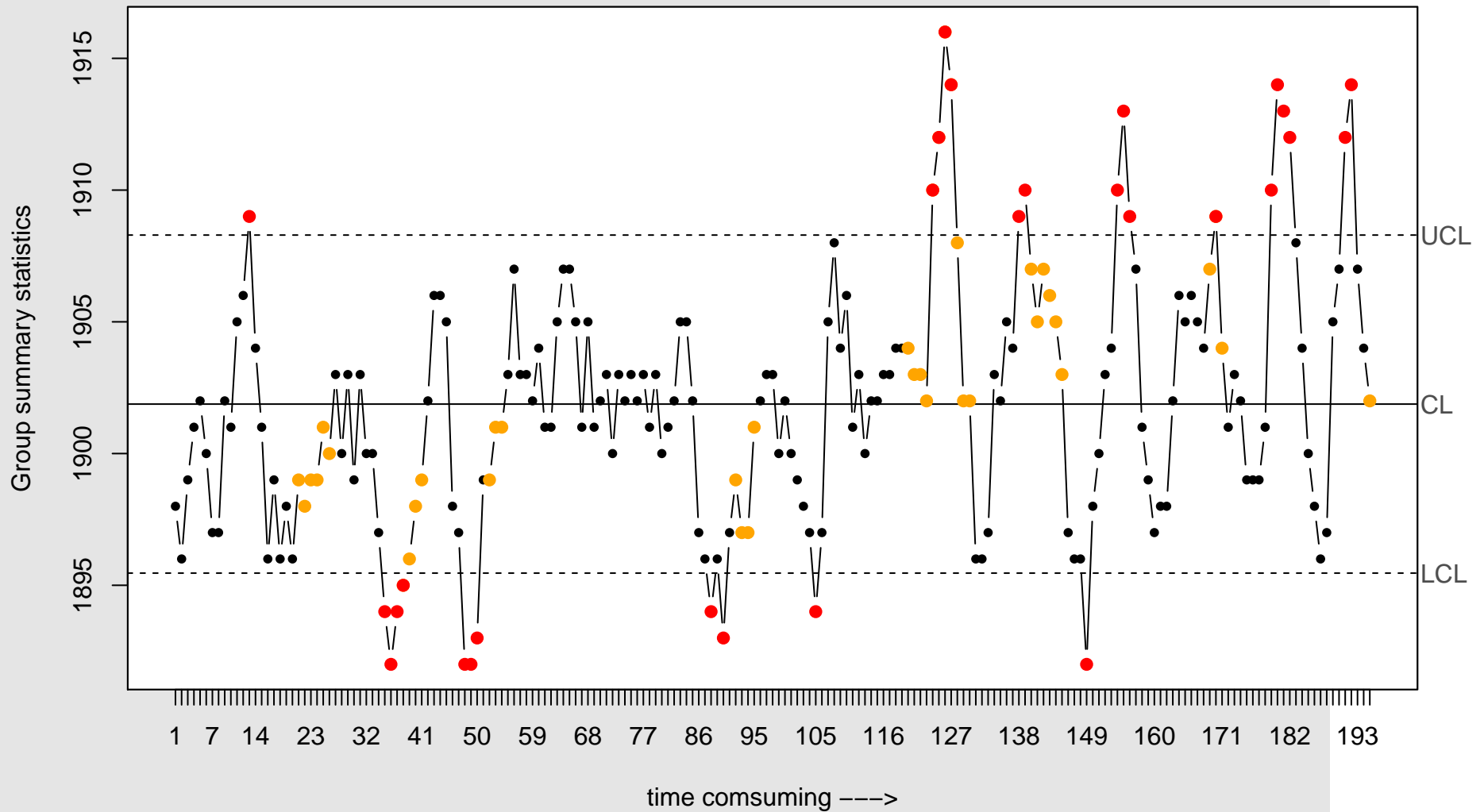


Number of groups = 195  
 Center = 1908.918  
 StdDev = 2.079221

LCL = 1902.68  
 UCL = 1915.156

Number beyond limits = 29  
 Number violating runs = 42

### 309th column point of this product

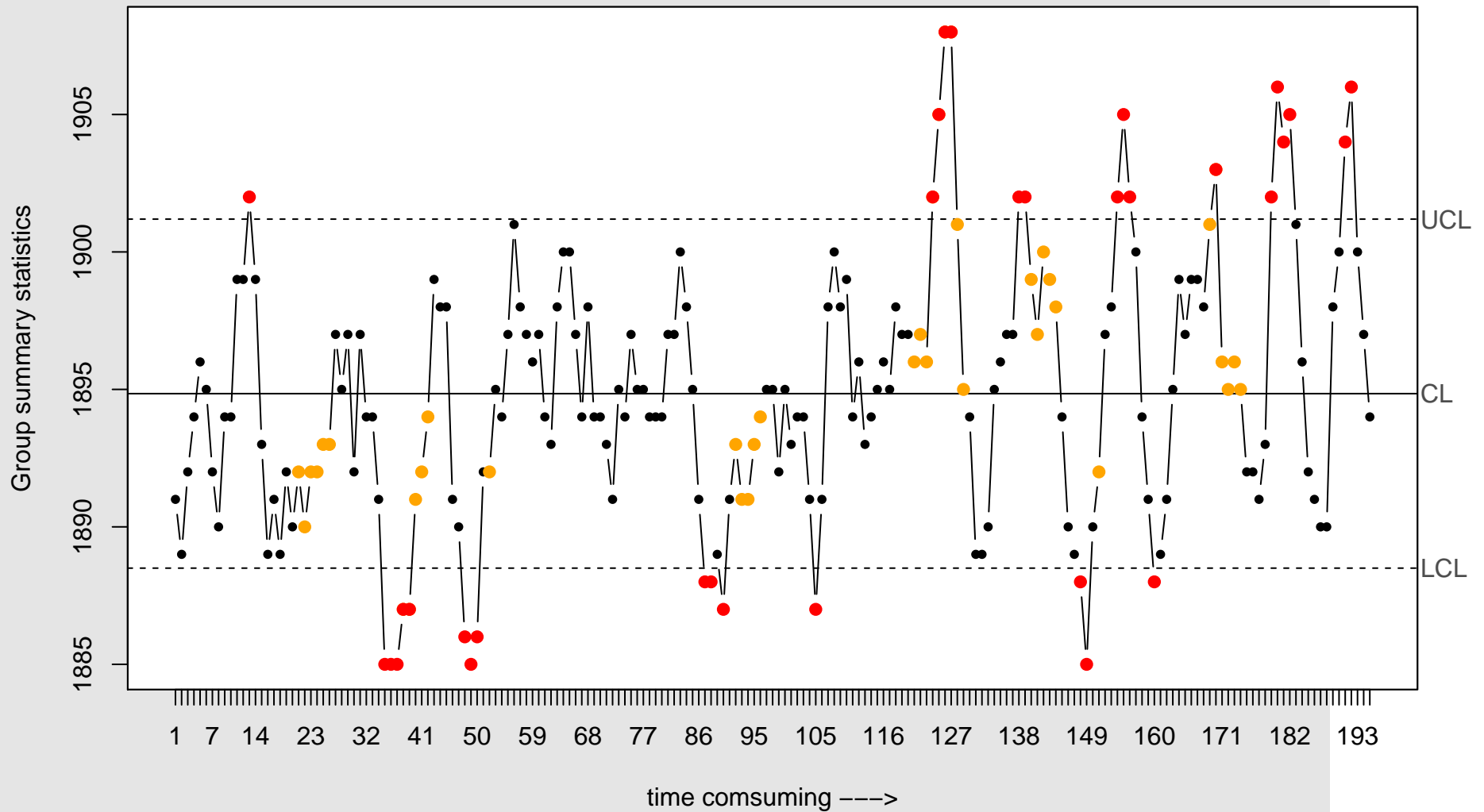


Number of groups = 195  
Center = 1901.877  
StdDev = 2.138627

LCL = 1895.461  
UCL = 1908.293

Number beyond limits = 28  
Number violating runs = 38

### 310th column point of this product



Number of groups = 195

Center = 1894.846

StdDev = 2.115778

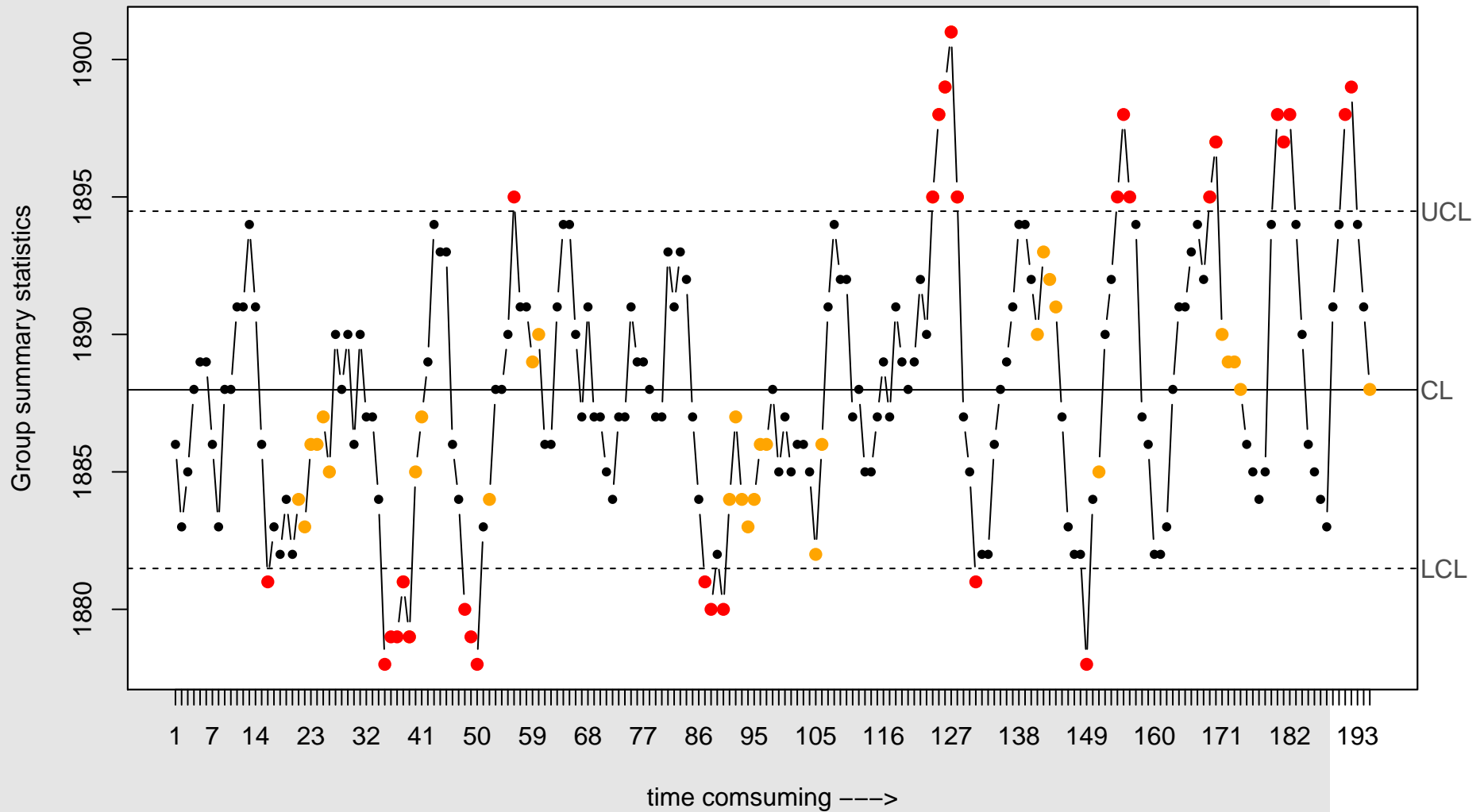
LCL = 1888.499

UCL = 1901.193

Number beyond limits = 32

Number violating runs = 38

### 311th column point of this product



Number of groups = 195

Center = 1887.985

StdDev = 2.166045

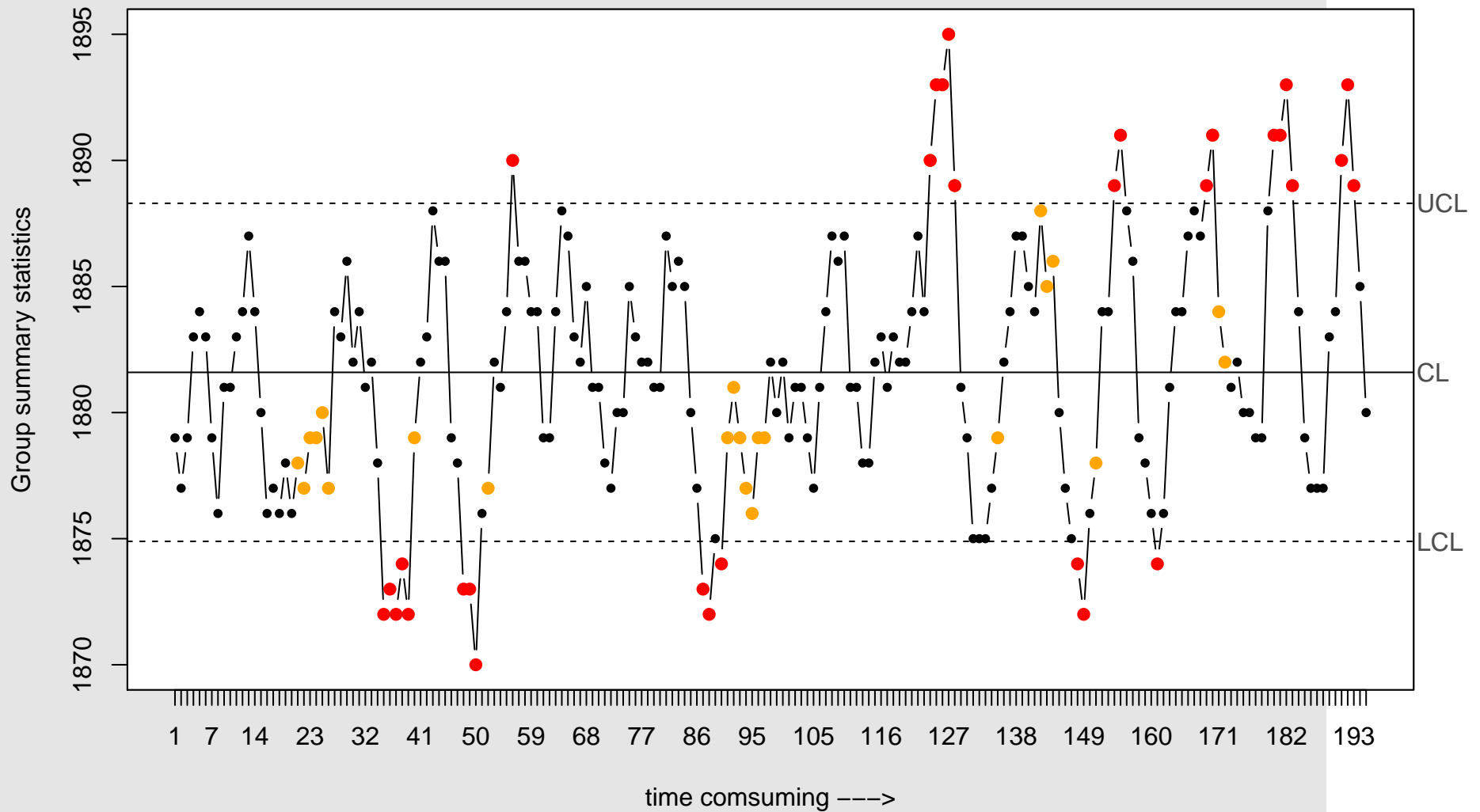
LCL = 1881.486

UCL = 1894.483

Number beyond limits = 30

Number violating runs = 39

# 312th column point of this product

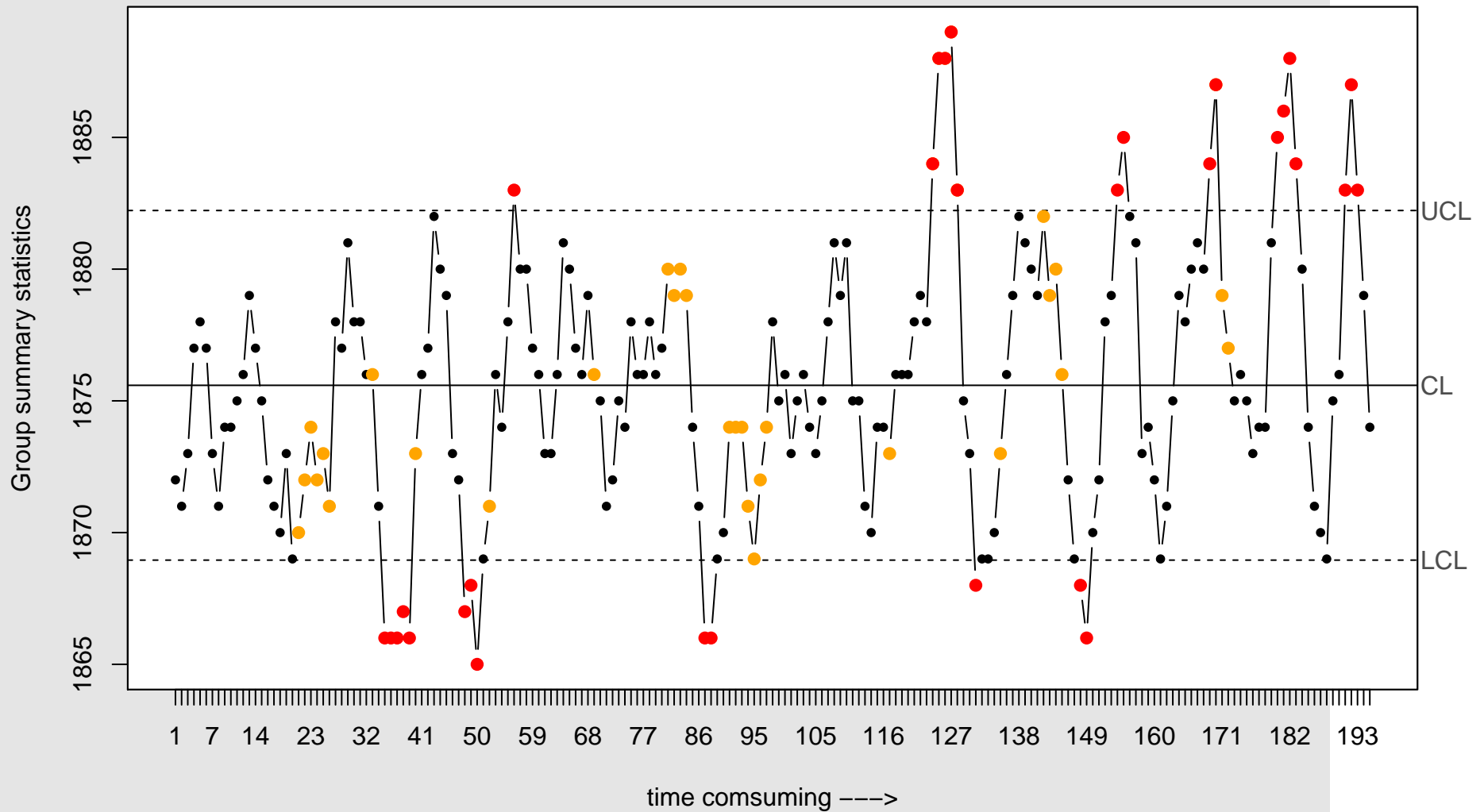


Number of groups = 195  
 Center = 1881.595  
 StdDev = 2.234591

LCL = 1874.891  
 UCL = 1888.299

Number beyond limits = 31  
 Number violating runs = 28

### 313th column point of this product



Number of groups = 195

Center = 1875.59

StdDev = 2.211742

LCL = 1868.955

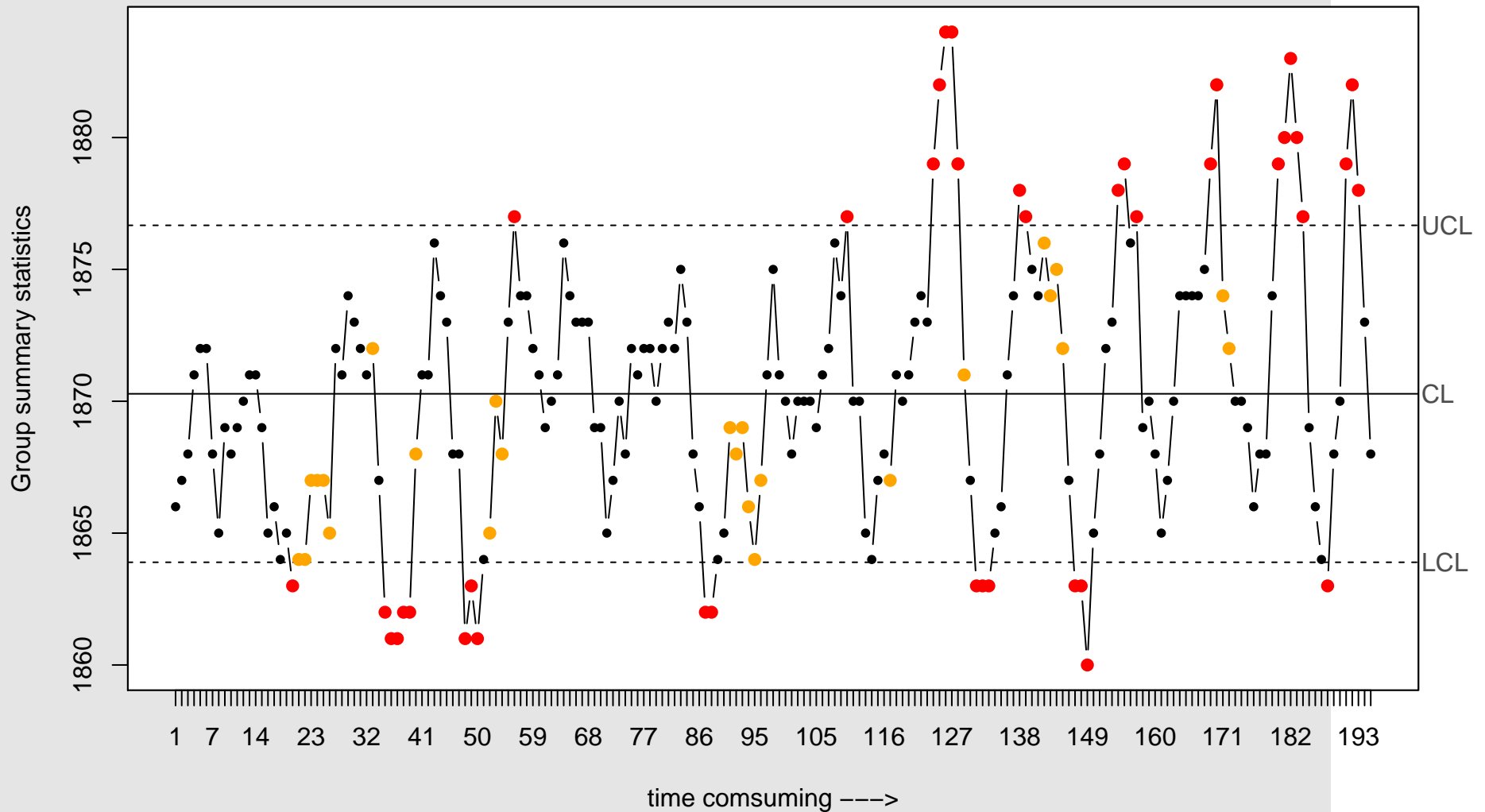
UCL = 1882.225

Number beyond limits = 30

Number violating runs = 35



### 314th column point of this product



Number of groups = 195

Center = 1870.282

StdDev = 2.129487

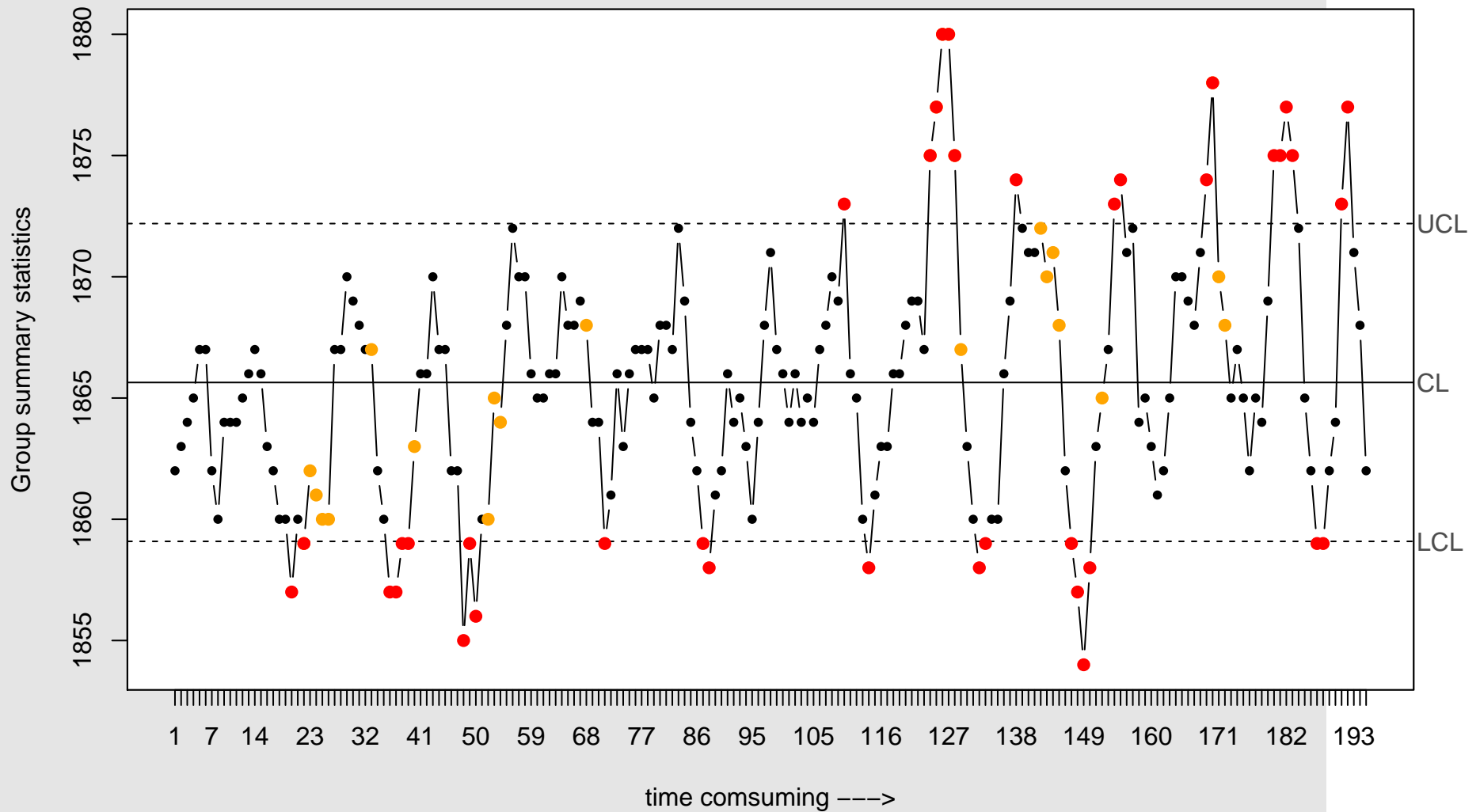
LCL = 1863.894

UCL = 1876.671

Number beyond limits = 40

Number violating runs = 29

### 315th column point of this product



Number of groups = 195

Center = 1865.641

StdDev = 2.184324

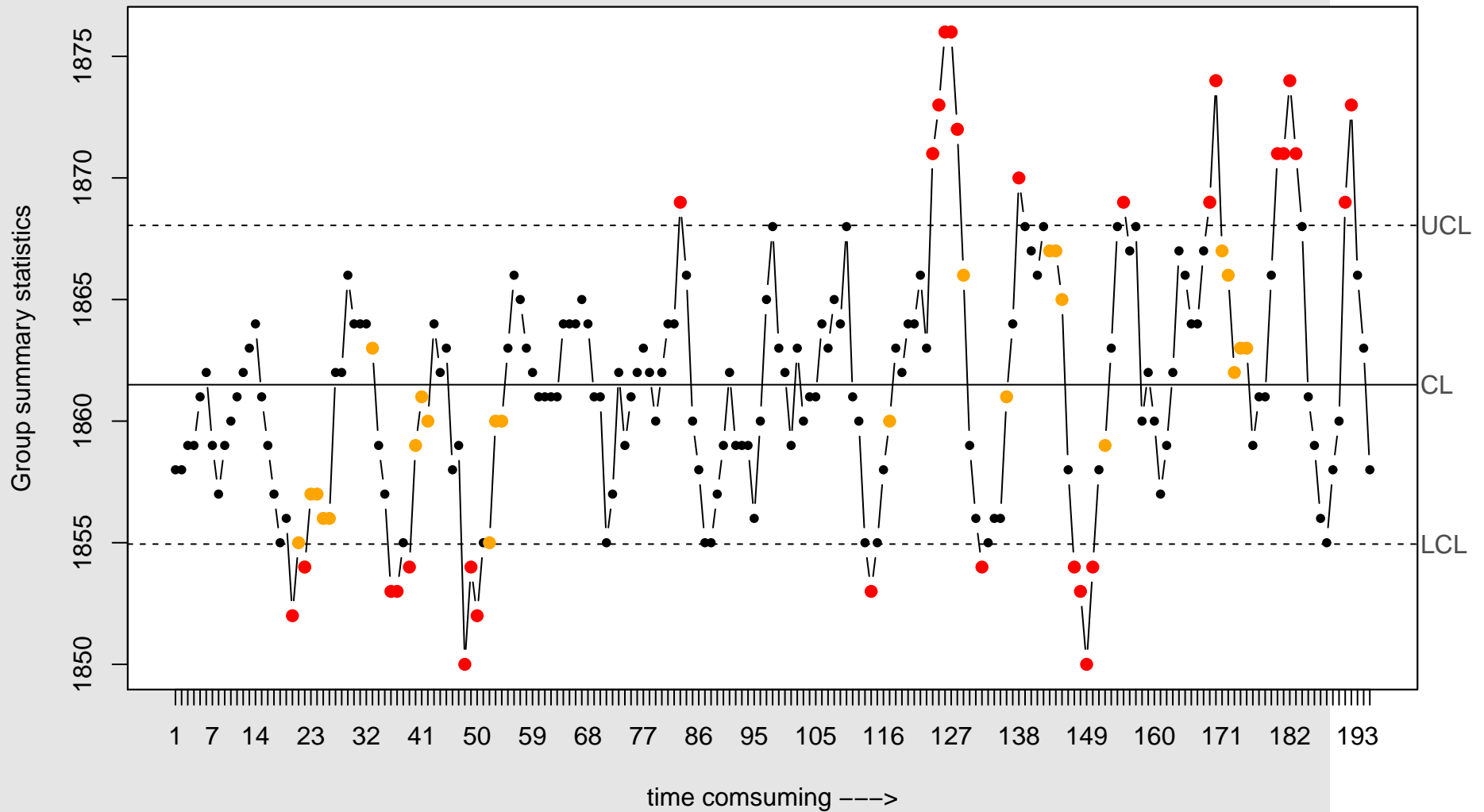
LCL = 1859.088

UCL = 1872.194

Number beyond limits = 38

Number violating runs = 25

### 316th column point of this product



Number of groups = 195

Center = 1861.497

StdDev = 2.184324

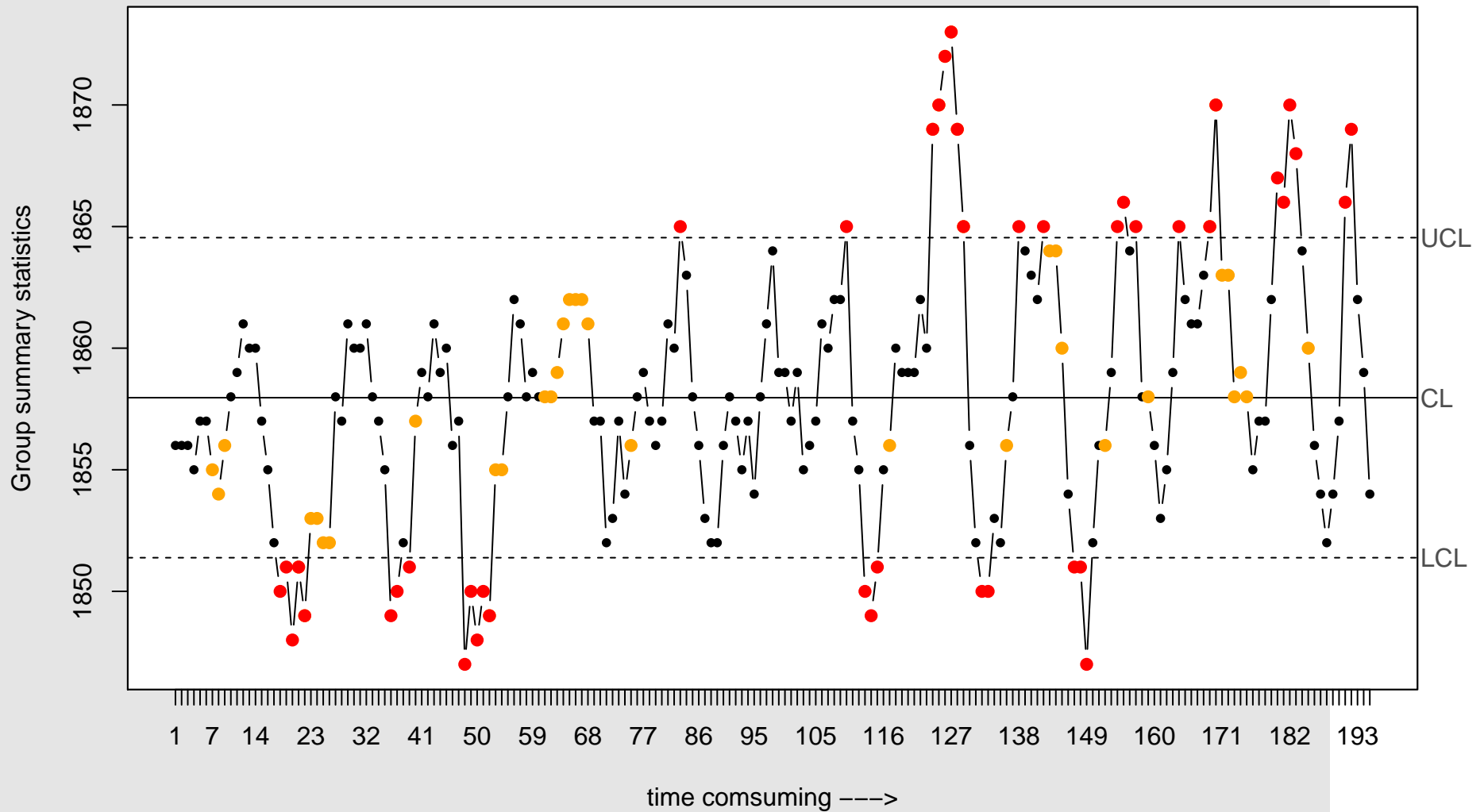
LCL = 1854.944

UCL = 1868.05

Number beyond limits = 30

Number violating runs = 32

# 317th column point of this product



Number of groups = 195

Center = 1857.964

StdDev = 2.193463

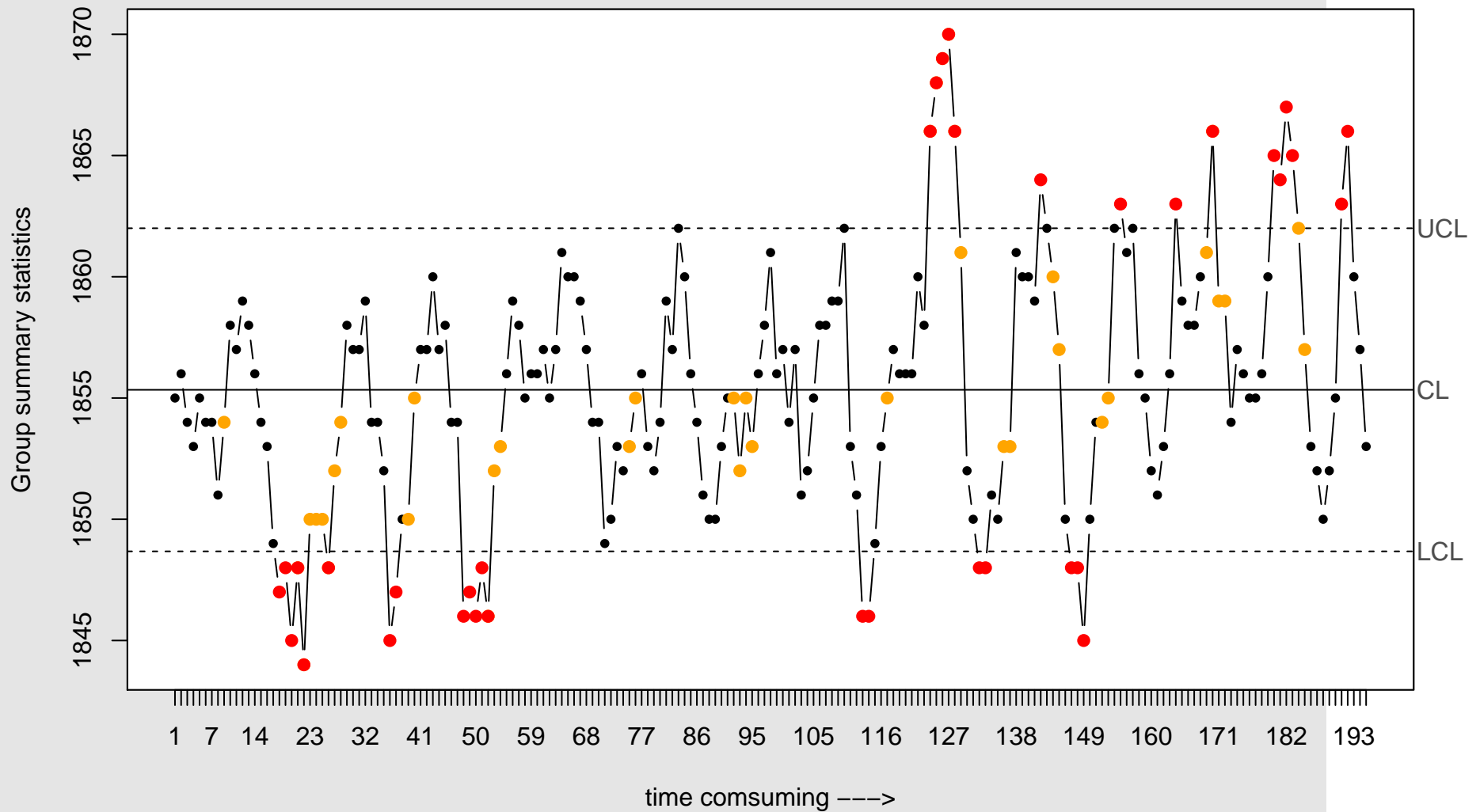
LCL = 1851.384

UCL = 1864.544

Number beyond limits = 43

Number violating runs = 43

# 318th column point of this product



Number of groups = 195

Center = 1855.338

StdDev = 2.220882

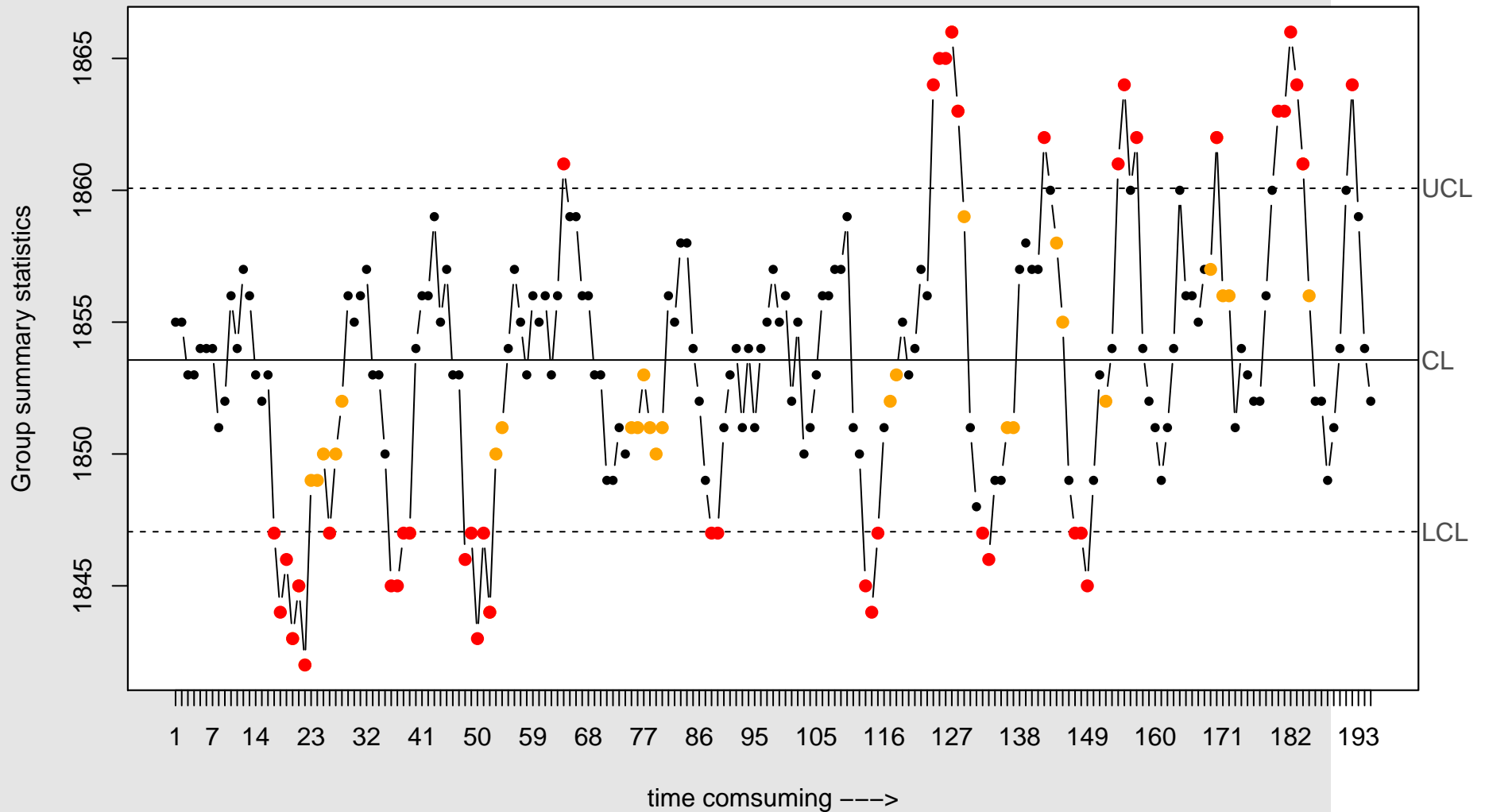
LCL = 1848.676

UCL = 1862.001

Number beyond limits = 35

Number violating runs = 39

### 319th column point of this product



Number of groups = 195

Center = 1853.564

StdDev = 2.170615

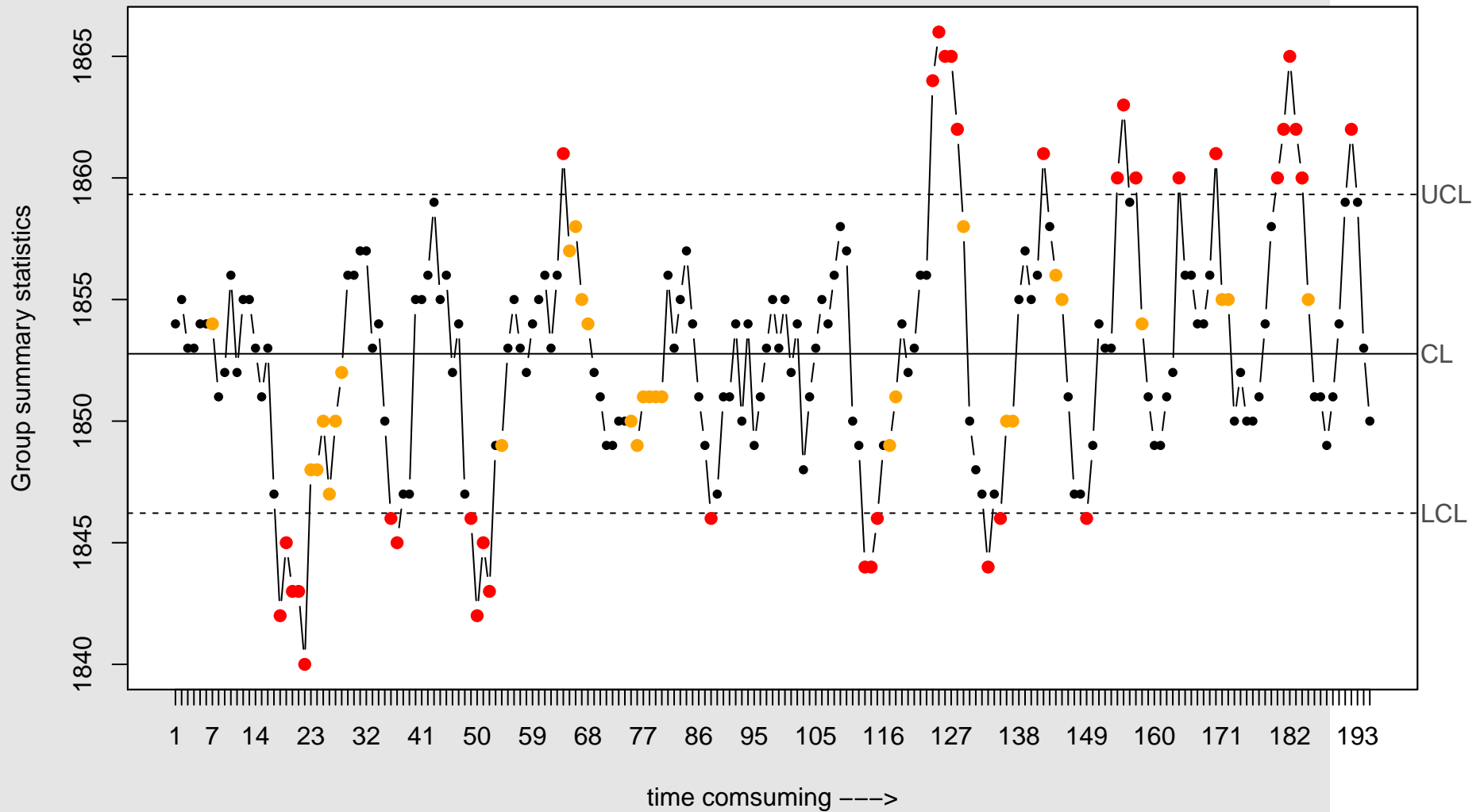
LCL = 1847.052

UCL = 1860.076

Number beyond limits = 43

Number violating runs = 35

### 320th column point of this product



Number of groups = 195

Center = 1852.769

StdDev = 2.184324

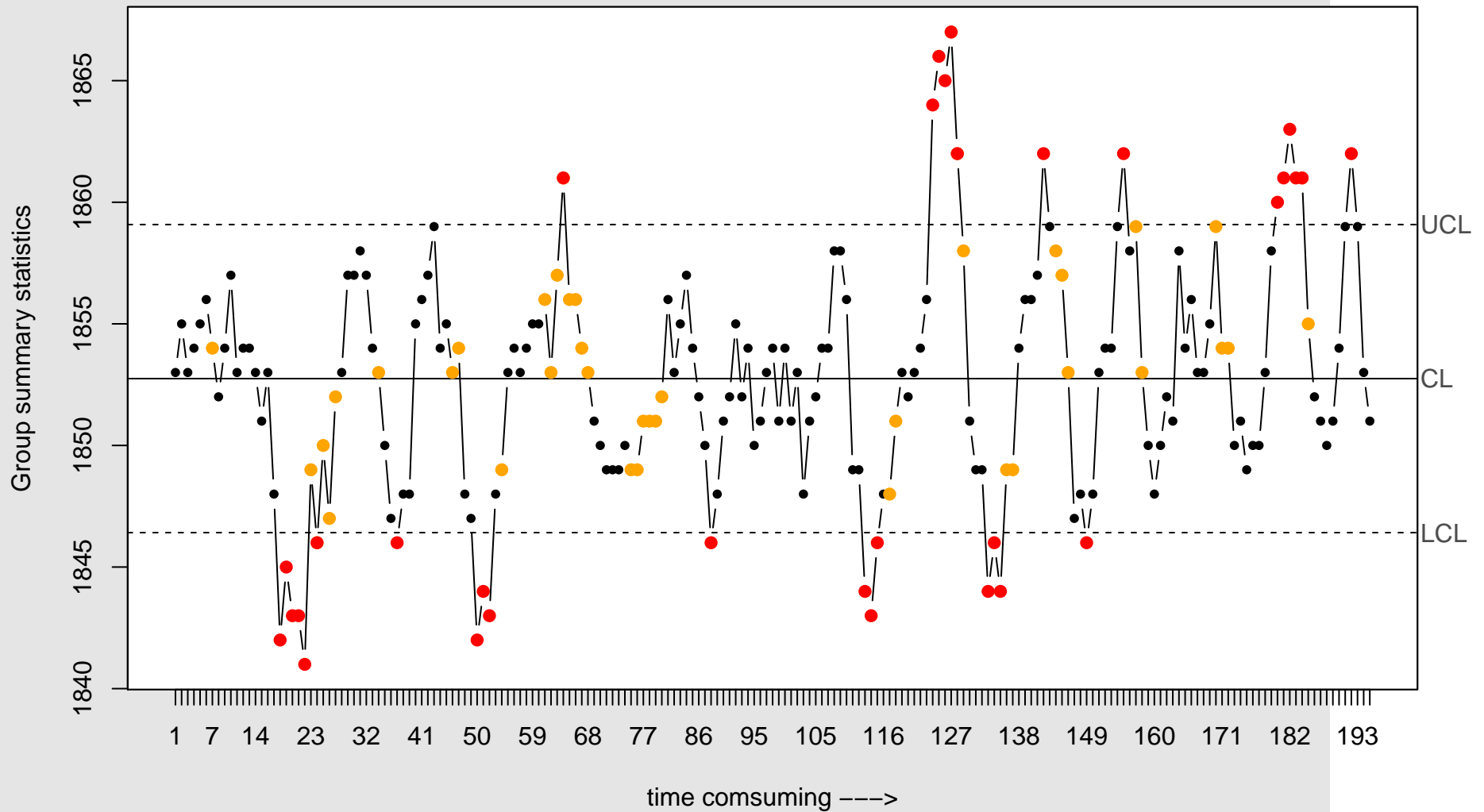
LCL = 1846.216

UCL = 1859.322

Number beyond limits = 36

Number violating runs = 34

### 321th column point of this product



Number of groups = 195

Center = 1852.749

StdDev = 2.111209

LCL = 1846.415

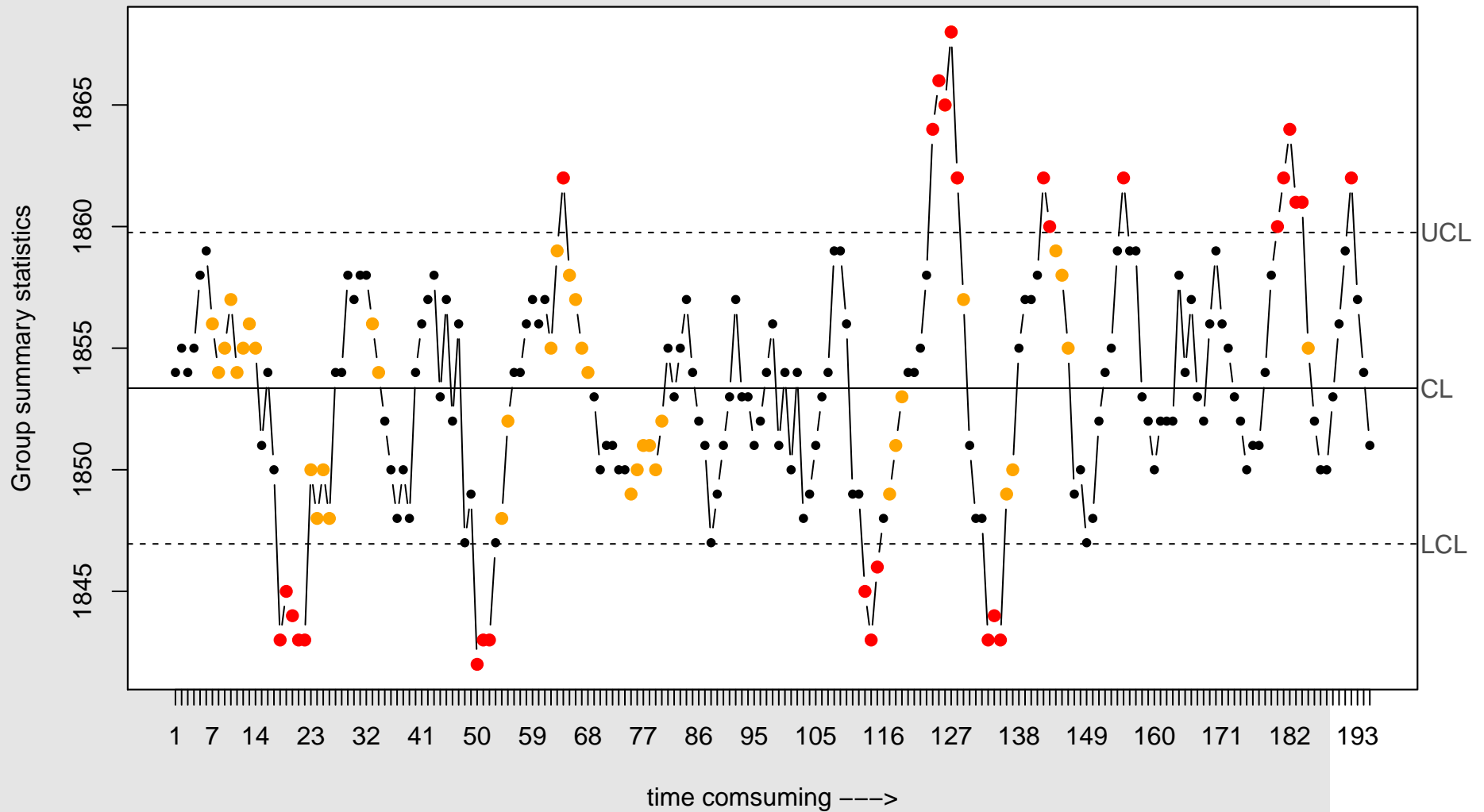
UCL = 1859.082

Number beyond limits = 32

Number violating runs = 41



### 322th column point of this product



Number of groups = 195  
 Center = 1853.354  
 StdDev = 2.134057

LCL = 1846.952  
 UCL = 1859.756

Number beyond limits = 29  
 Number violating runs = 43