Appendix B

Graphical Displays of UCL95
for Various Methods and Distributions

Type 1 Left Censored Datasets

Explanation of Legend Acronyms

Acronym	Explanation
Cohen's MLE (Tiku)	UCL based upon Cohen's Maximum Likelihood Estimates using the Tiku's Method
Cohen's MLE (t)	UCL based upon Cohen's Maximum Likelihood Estimates using Student's t-Distribution Critical Value
DL/2(t)	UCL based upon DL/2 Method using Student's t-Distribution Critical Value
FP-ROS (Land)	UCL based upon Fully parametric ROS Method using Land's H-statistic
Gamma ROS (Appx.)	UCL based upon Gamma ROS Method using Gamma Approximate-UCL Method.
KM(z)	UCL based upon Kaplan-Meier Estimates using Standard Normal Distribution Critical Value
KM (%)	UCL based upon Kaplan-Meier Estimates using the Percentile Bootstrap Method.
KM (BCA)	UCL based upon Kaplan-Meier Estimates using the Bias Corrected Accelerated Percentile Bootstrap Method.
KM (Chebyshev)	UCL based upon Kaplan-Meier Estimates using the Chebyshev Inequality
KM (Jackknife)	UCL based upon Kaplan-Meier Estimates using the Jackknife Method
UMLE (Tiku)	UCL based upon Unbiased Maximum Likelihood Estimates using the Tiku's Method

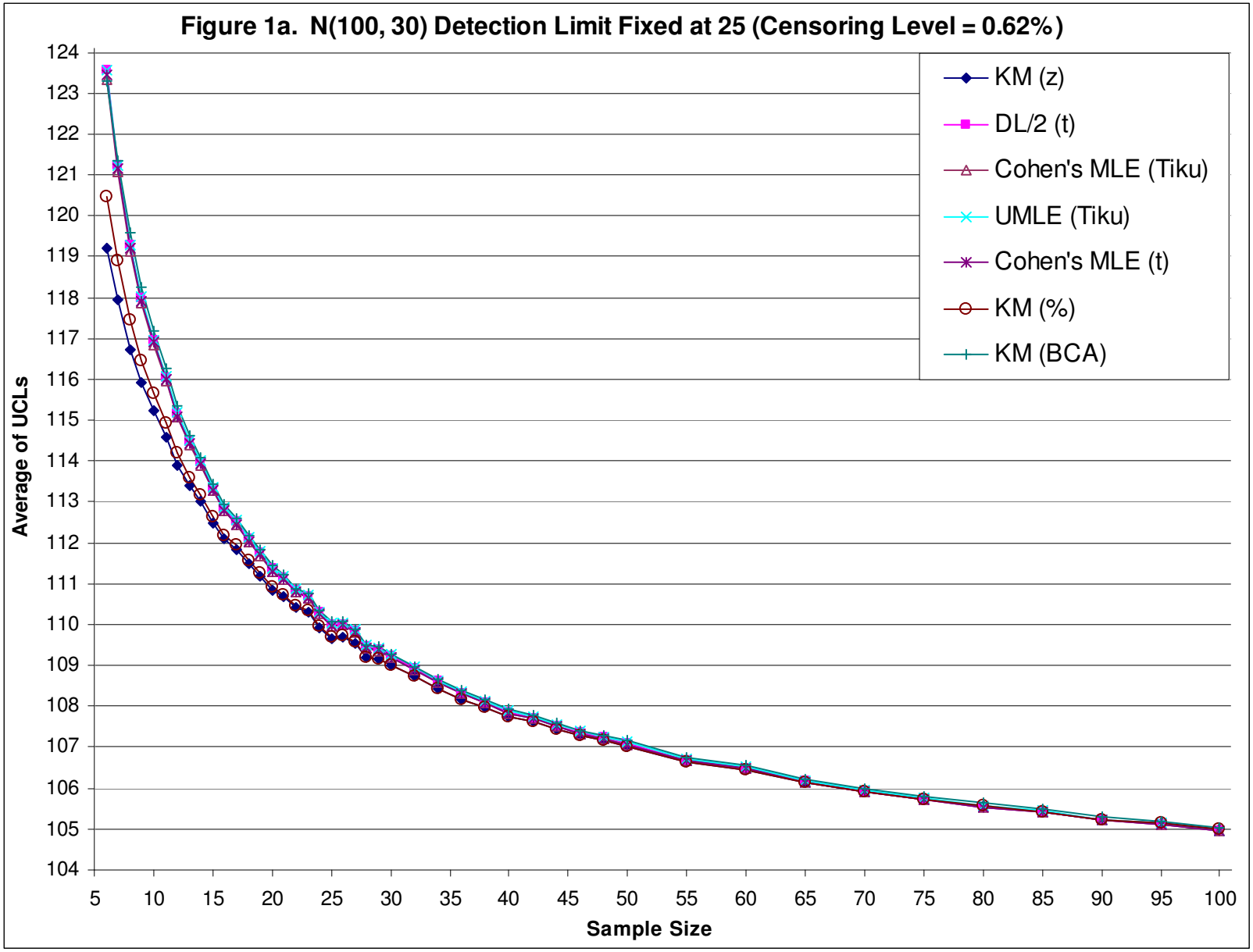
Figure 1a. N(100, 30) Detection Limit Fixed at 25 (Censoring Level = 0.62%)
Average of UCLs
Sample Size
124
123
122
121
120
119
118
117
116
115
114
113
112
111
110
109
108
107
106
105
104
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Cohen's MLE (Tiku)
UMLE (Tiku)
Cohen's MLE (t)
KM (%)
KM (BCA)

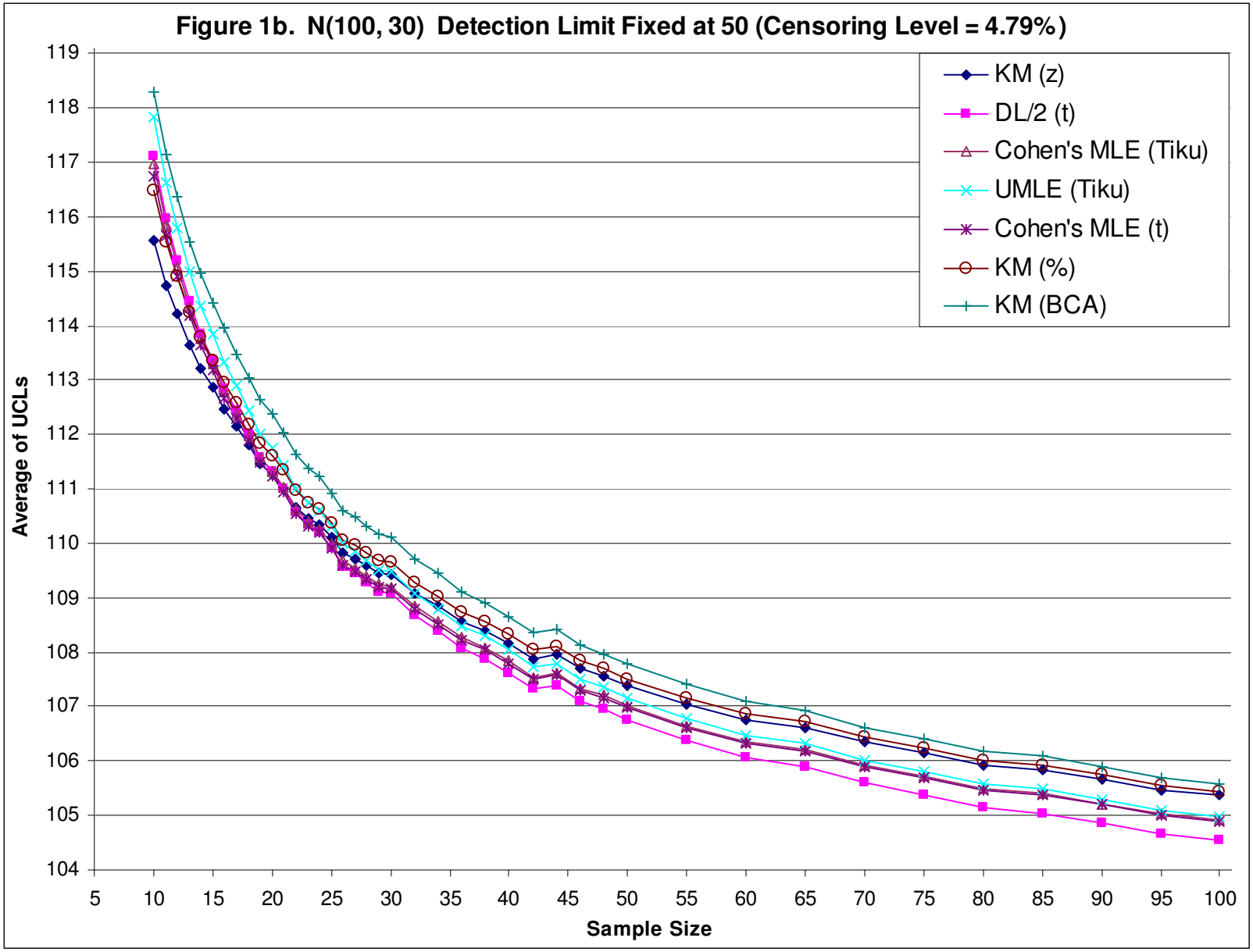
Figure 1b. N(100, 30) Detection Limit Fixed at 50 (Censoring Level = 4.79%)
Average of UCLs
Sample Size
119
118
117
116
115
114
113
112
111
110
109
108
107
106
105
104
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Cohen's MLE (Tiku)
UMLE (Tiku)
Cohen's MLE (t)
KM (%)
KM (BCA)

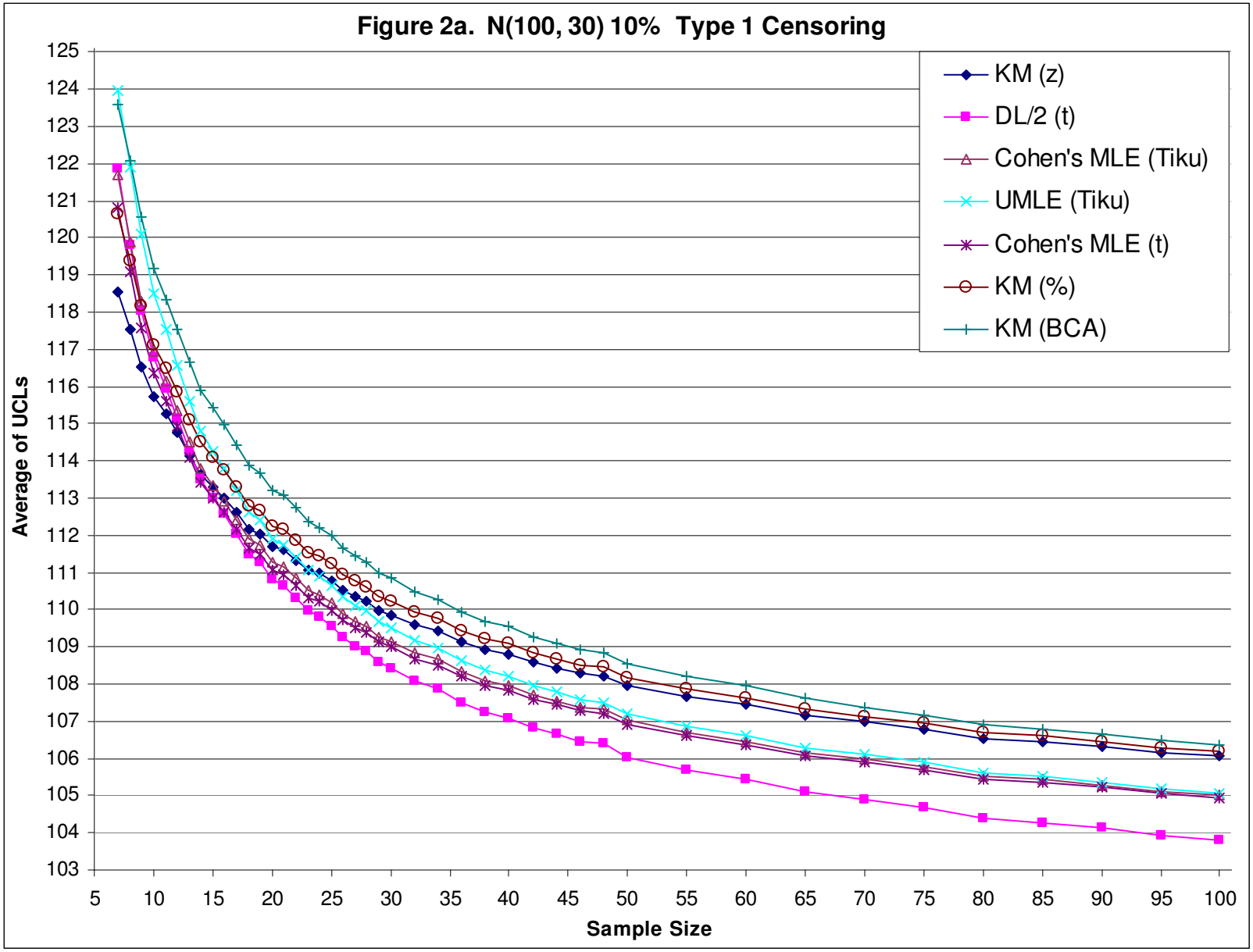
Figure 2a. N(100, 30) 10% Type 1 Censoring
Average of UCLs
Sample Size
KM (z)
DL/2 (t)
Cohen's MLE (Tiku)
UMLE (Tiku)
Cohen's MLE (t)
KM (%)
KM (BCA)
125
124
123
122
121
120
119
118
117
116
115
114
113
112
111
110
109
108
107
106
105
104
103
5
10
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20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100

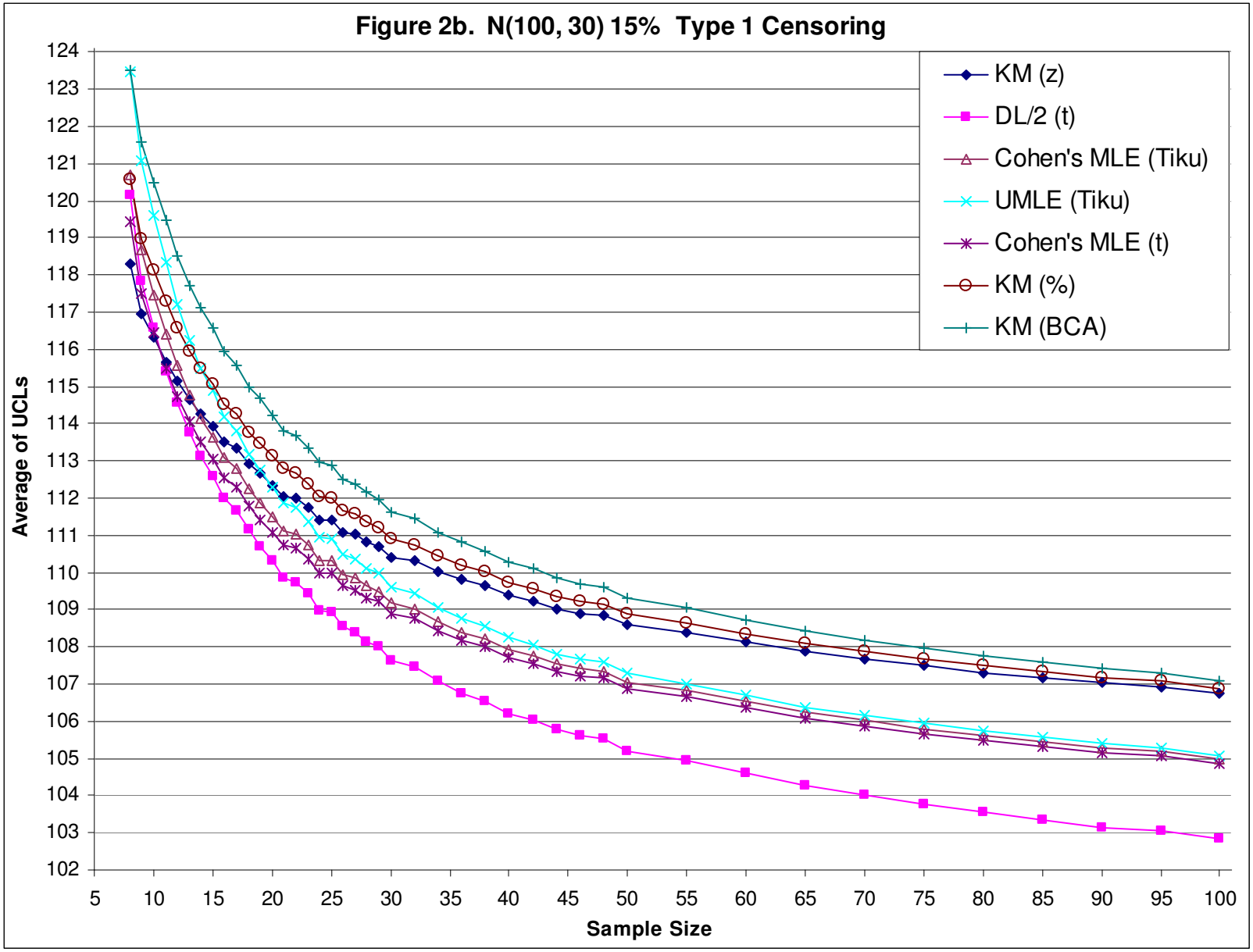
Figure 2b. N(100, 30) 15% Type 1 Censoring
Average of UCLs
Sample Size
124
123
122
121
120
119
118
117
116
115
114
113
112
111
110
109
108
107
106
105
104
103
102
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Cohen's MLE (Tiku)
UMLE (Tiku)
Cohen's MLE (t)
KM (%)
KM (BCA)

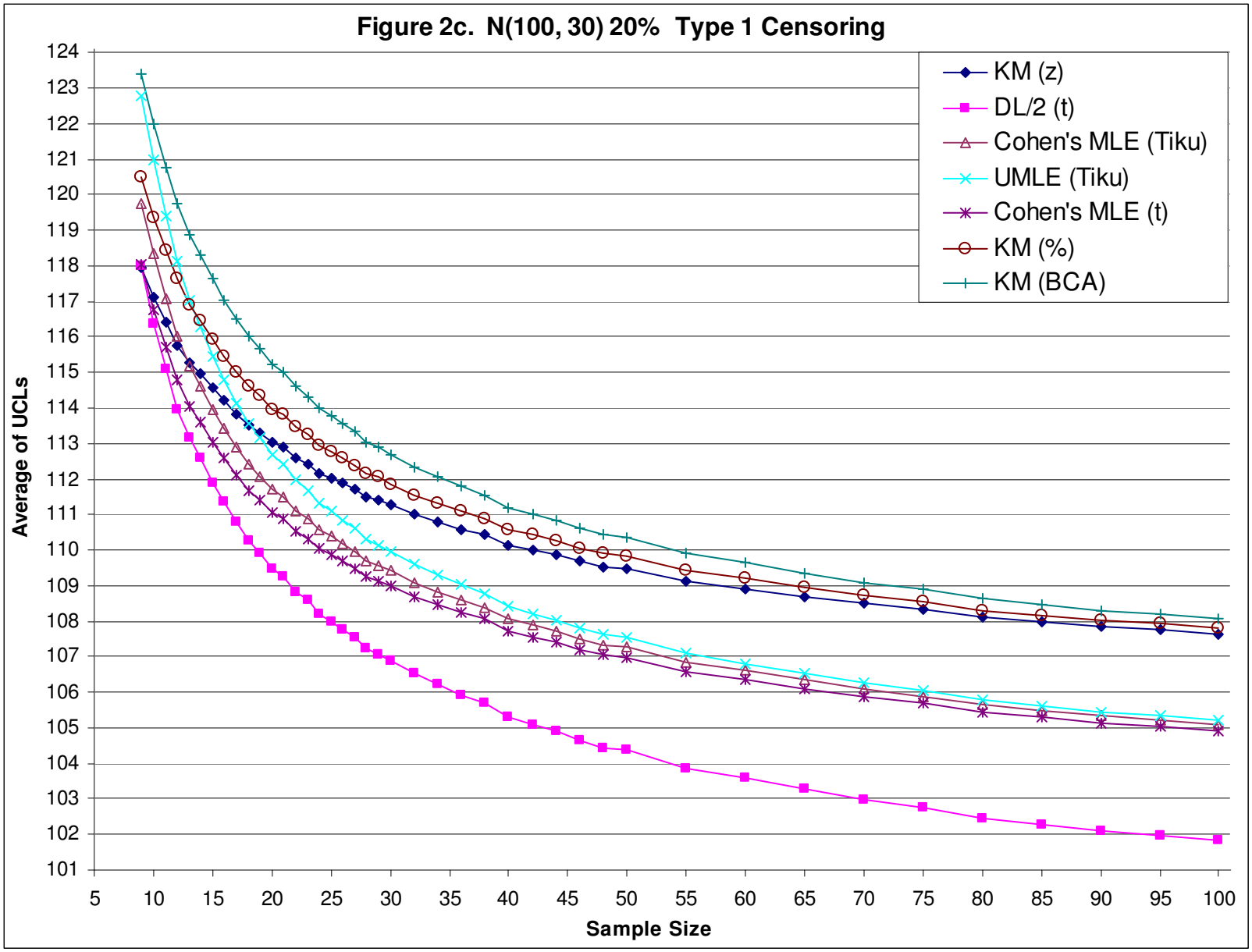
Figure 2c. N(100, 30) 20% Type 1 Censoring
Average of UCLs
Sample Size
KM (z)
DL/2 (t)
Cohen's MLE (Tiku)
UMLE (Tiku)
Cohen's MLE (t)
KM (%)
KM (BCA)
124
123
122
121
120
119
118
117
116
115
114
113
112
111
110
109
108
107
106
105
104
103
102
101
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100

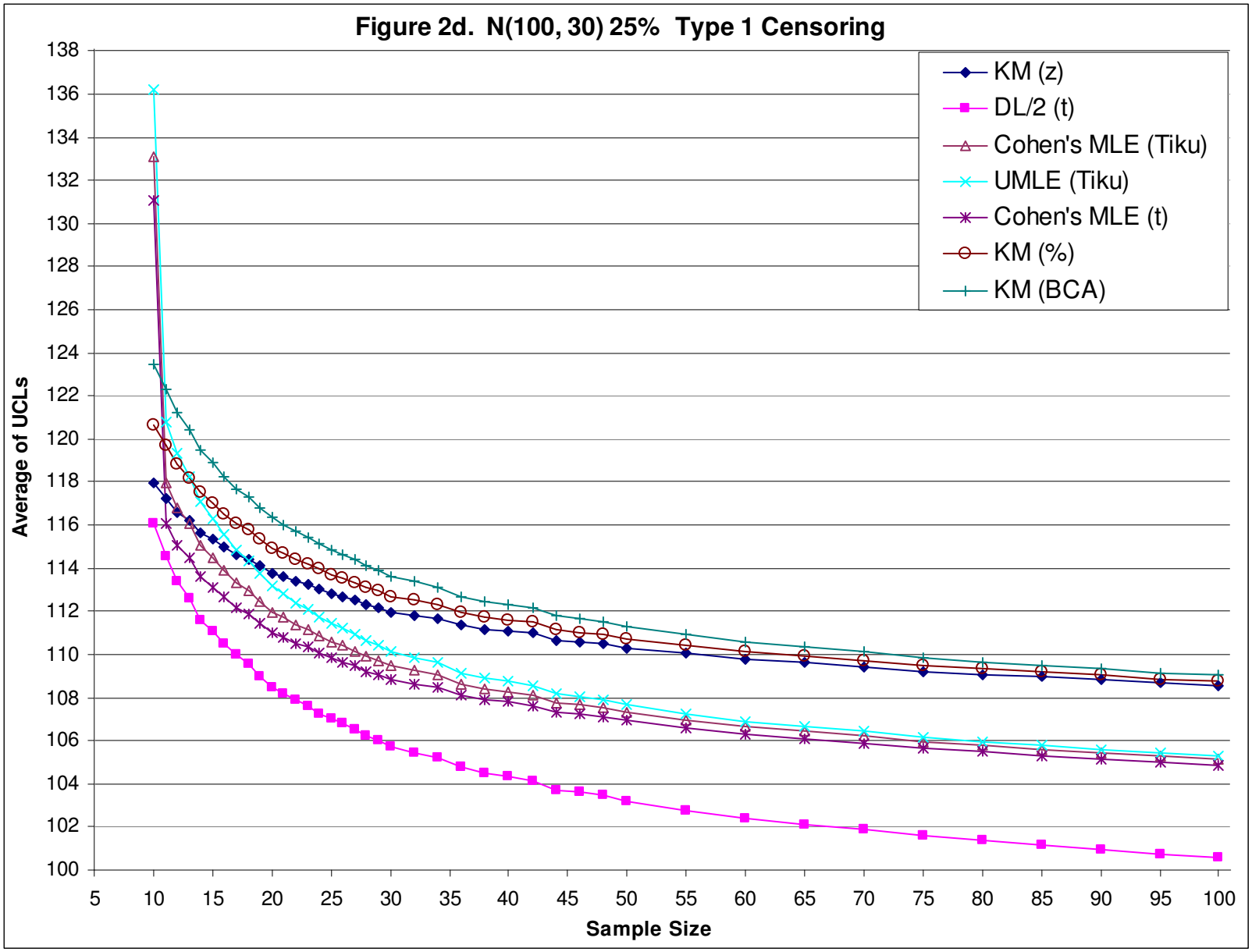
Figure 2d. N(100, 30) 25% Type 1 Censoring
Average of UCLs
Sample Size
138
136
134
132
130
128
126
124
122
120
118
116
114
112
110
108
106
104
102
100
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Cohen's MLE (Tiku)
UMLE (Tiku)
Cohen's MLE (t)
KM (%)
KM (BCA)

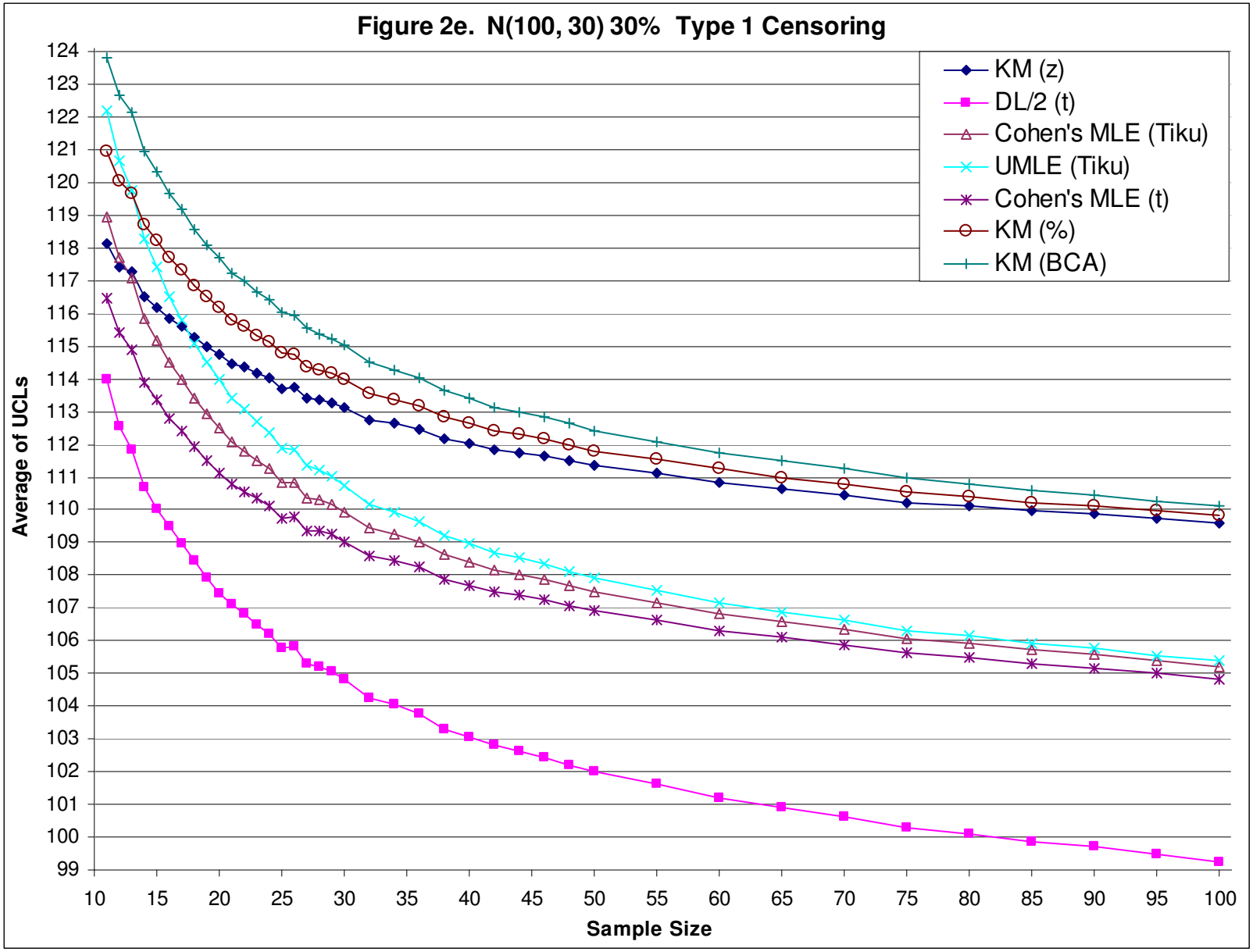
Figure 2e. N(100, 30) 30% Type 1 Censoring
Average of UCLs
Sample Size
KM (z)
DL/2 (t)
Cohen's MLE (Tiku)
UMLE (Tiku)
Cohen's MLE (t)
KM (%)
KM (BCA)
124
123
122
121
120
119
118
117
116
115
114
113
112
111
110
109
108
107
106
105
104
103
102
101
100
99
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100

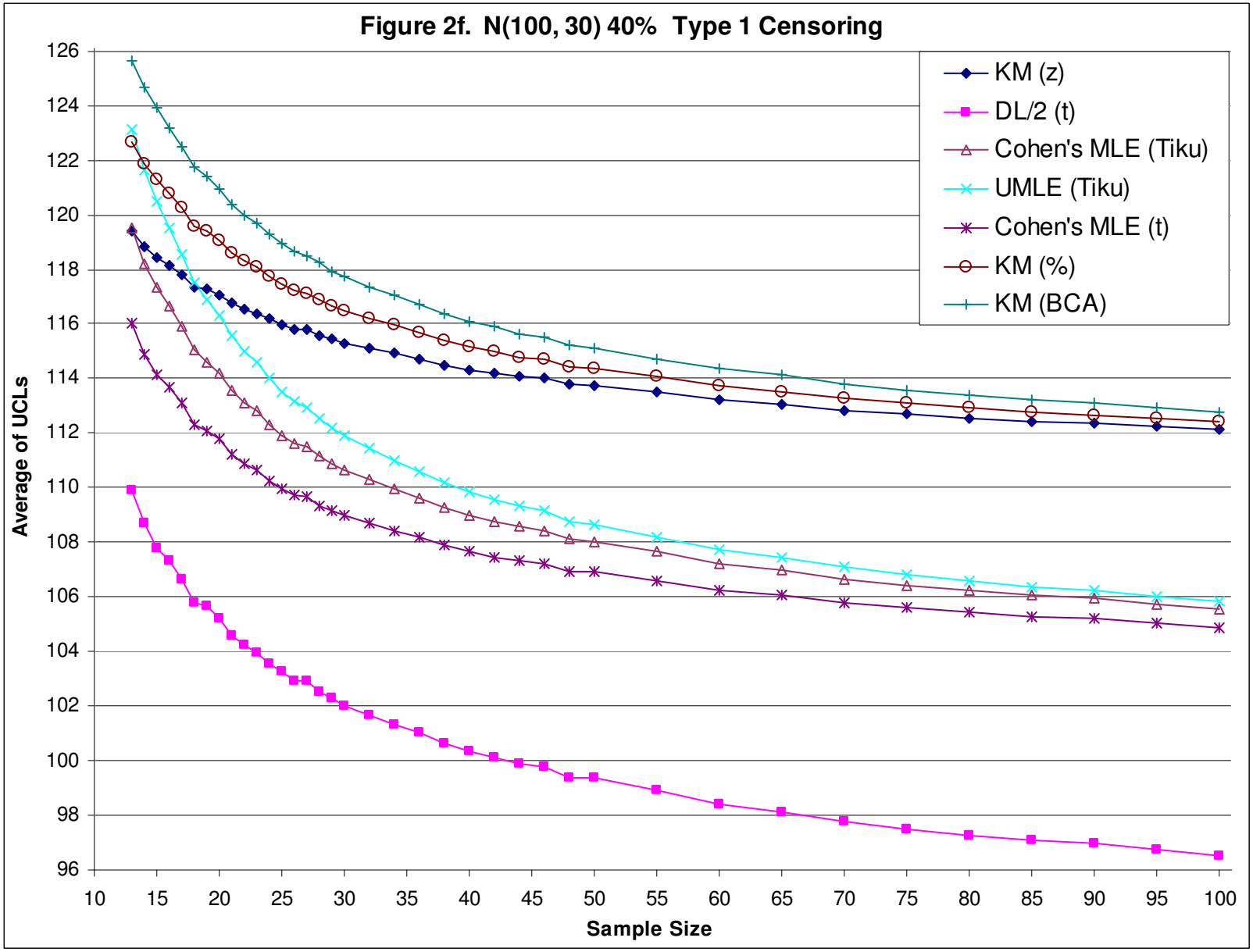
Figure 2f. N(100, 30) 40% Type 1 Censoring
Average of UCLs
Sample Size
126
124
122
120
118
116
114
112
110
108
106
104
102
100
98
96
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Cohen's MLE (Tiku)
UMLE (Tiku)
Cohen's MLE (t)
KM (%)
KM (BCA)

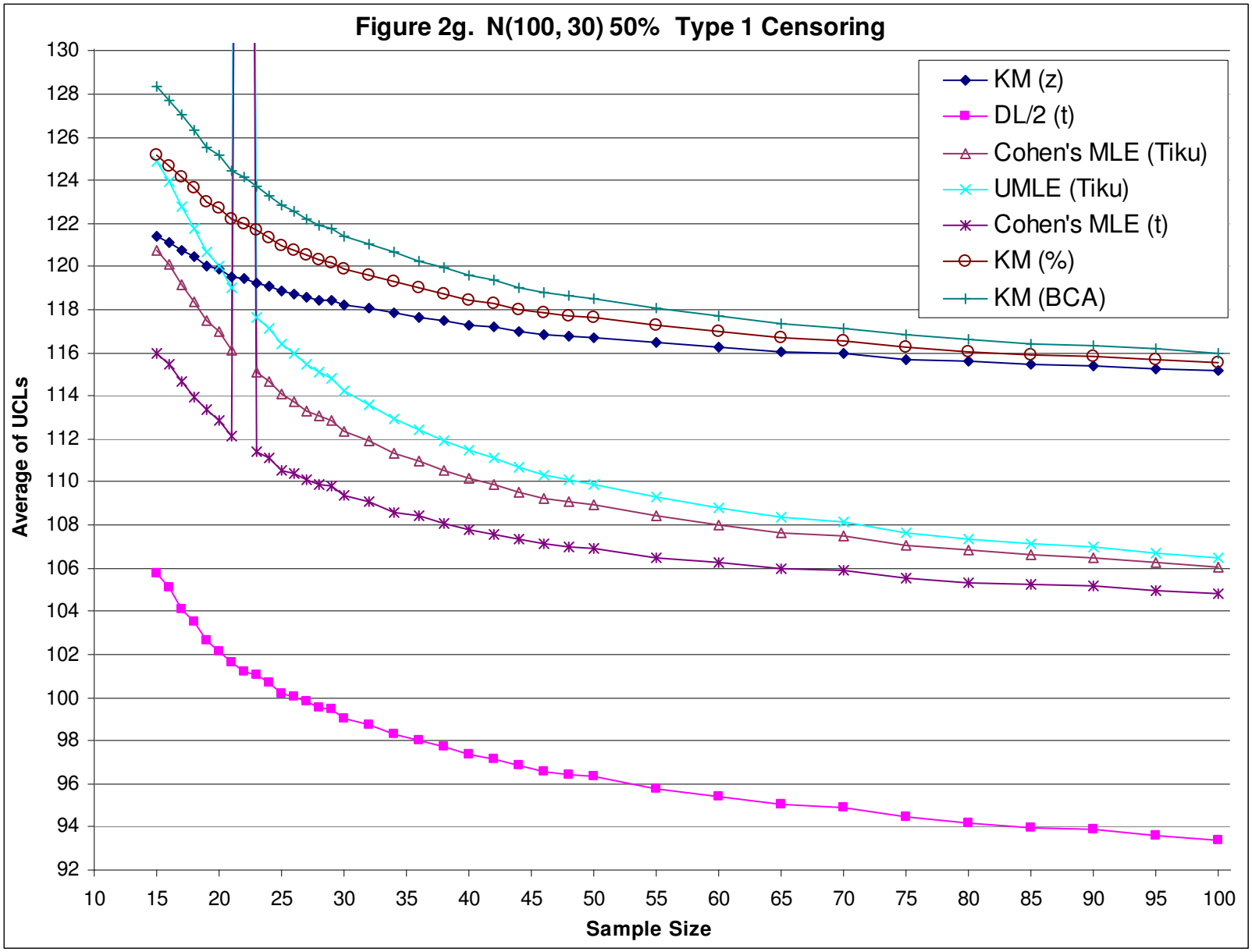
Figure 2g. N(100, 30) 50% Type 1 Censoring
Average of UCLs
Sample Size
130
128
126
124
122
120
118
116
114
112
110
108
106
104
102
100
98
96
94
92
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Cohen's MLE (Tiku)
UMLE (Tiku)
Cohen's MLE (t)
KM (%)
KM (BCA)

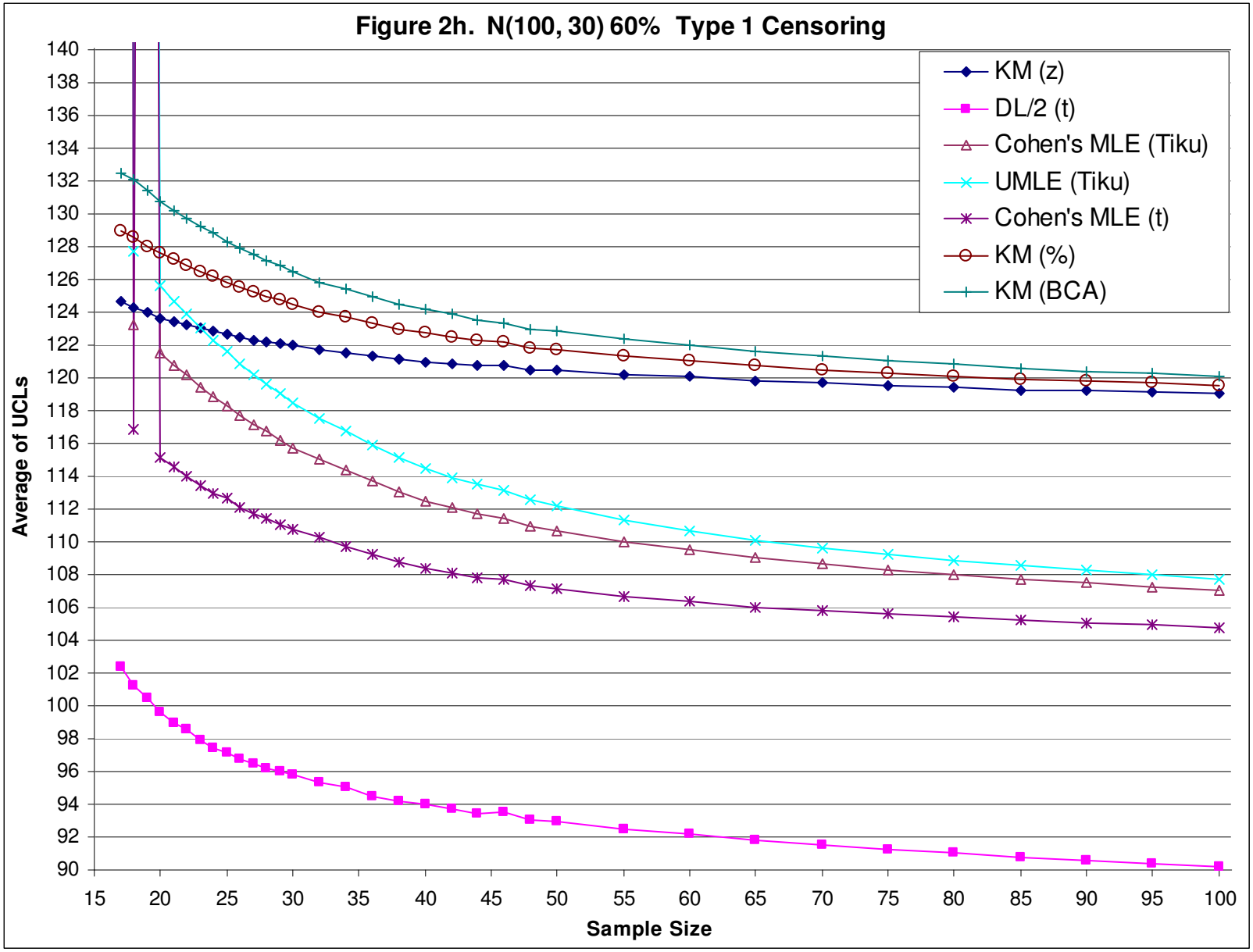
Figure 2h. N(100, 30) 60% Type 1 Censoring
Average of UCLs
Sample Size
KM (z)
DL/2 (t)
Cohen's MLE (Tiku)
UMLE (Tiku)
Cohen's MLE (t)
KM (%)
KM (BCA)
140
138
136
134
132
130
128
126
124
122
120
118
116
114
112
110
108
106
104
102
100
98
96
94
92
90
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100

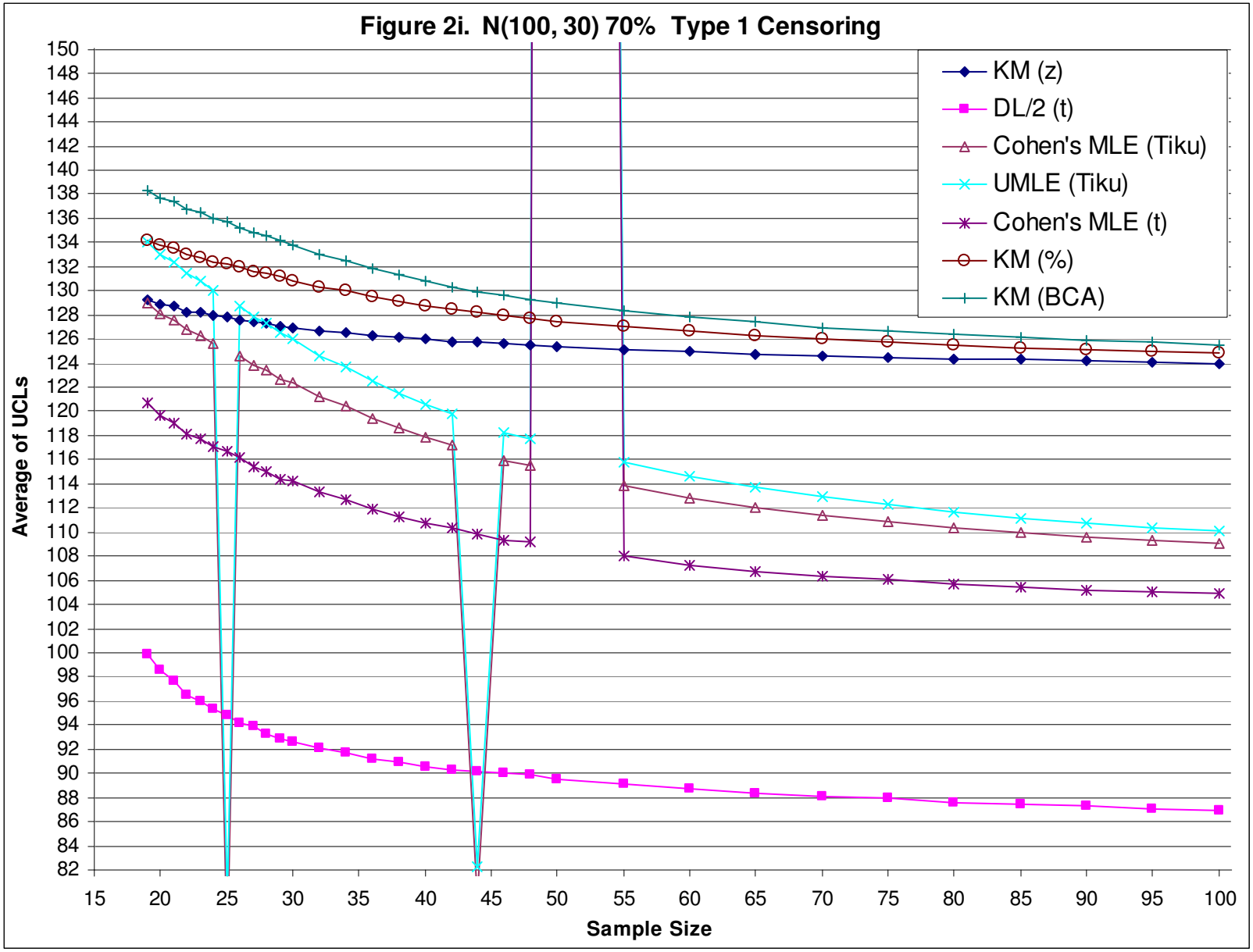
Figure 2i. N(100, 30) 70% Type 1 Censoring
Average of UCLs
Sample Size
KM (z)
DL/2 (t)
Cohen's MLE (Tiku)
UMLE (Tiku)
Cohen's MLE (t)
KM (%)
KM (BCA)
150
148
146
144
142
140
138
136
134
132
130
128
126
124
122
120
118
116
114
112
110
108
106
104
102
100
98
96
94
92
90
88
86
84
82
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100

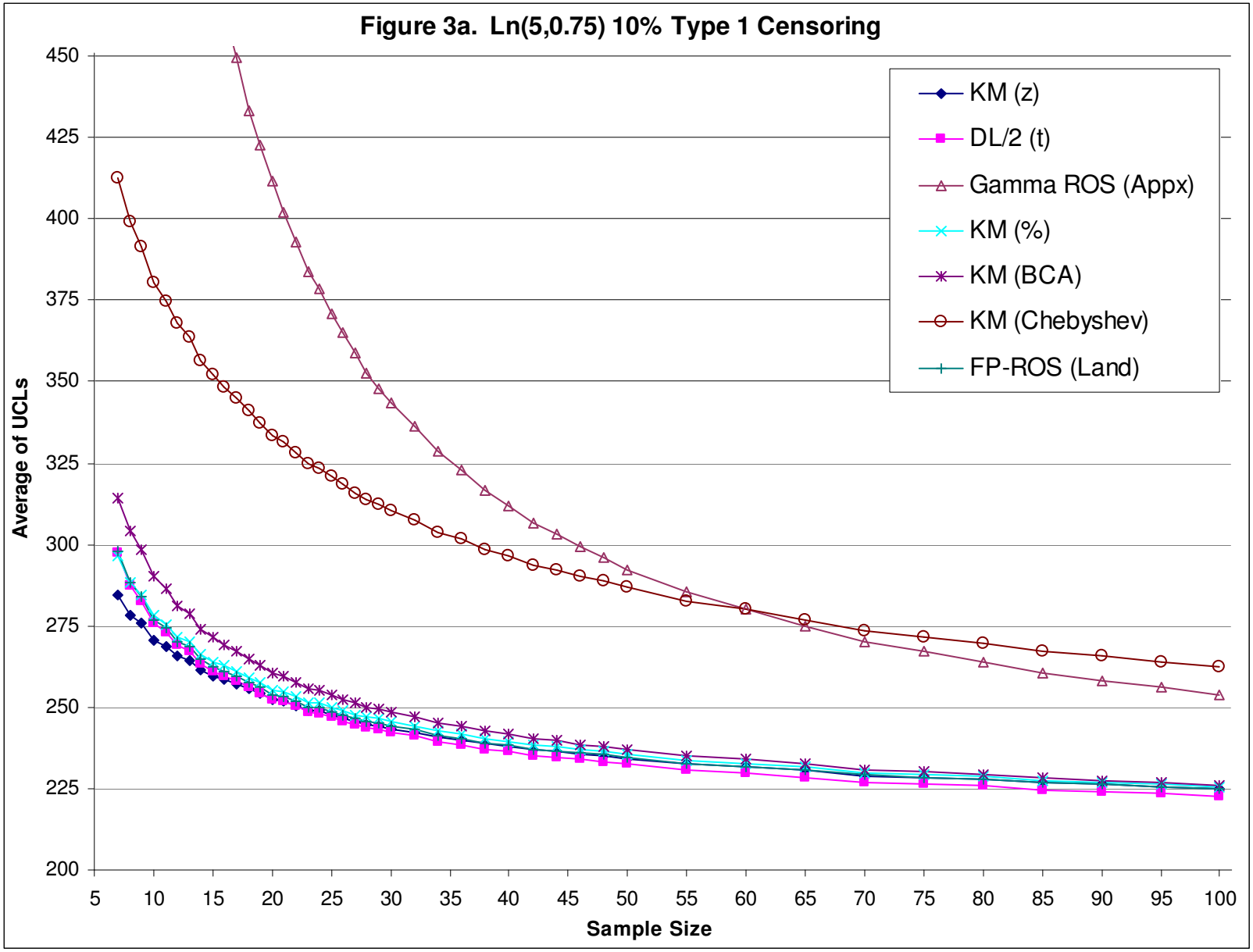
Figure 3a. Ln(5,0.75) 10% Type 1 Censoring
Average of UCLs
Sample Size
450
425
400
375
350
325
300
275
250
225
200
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

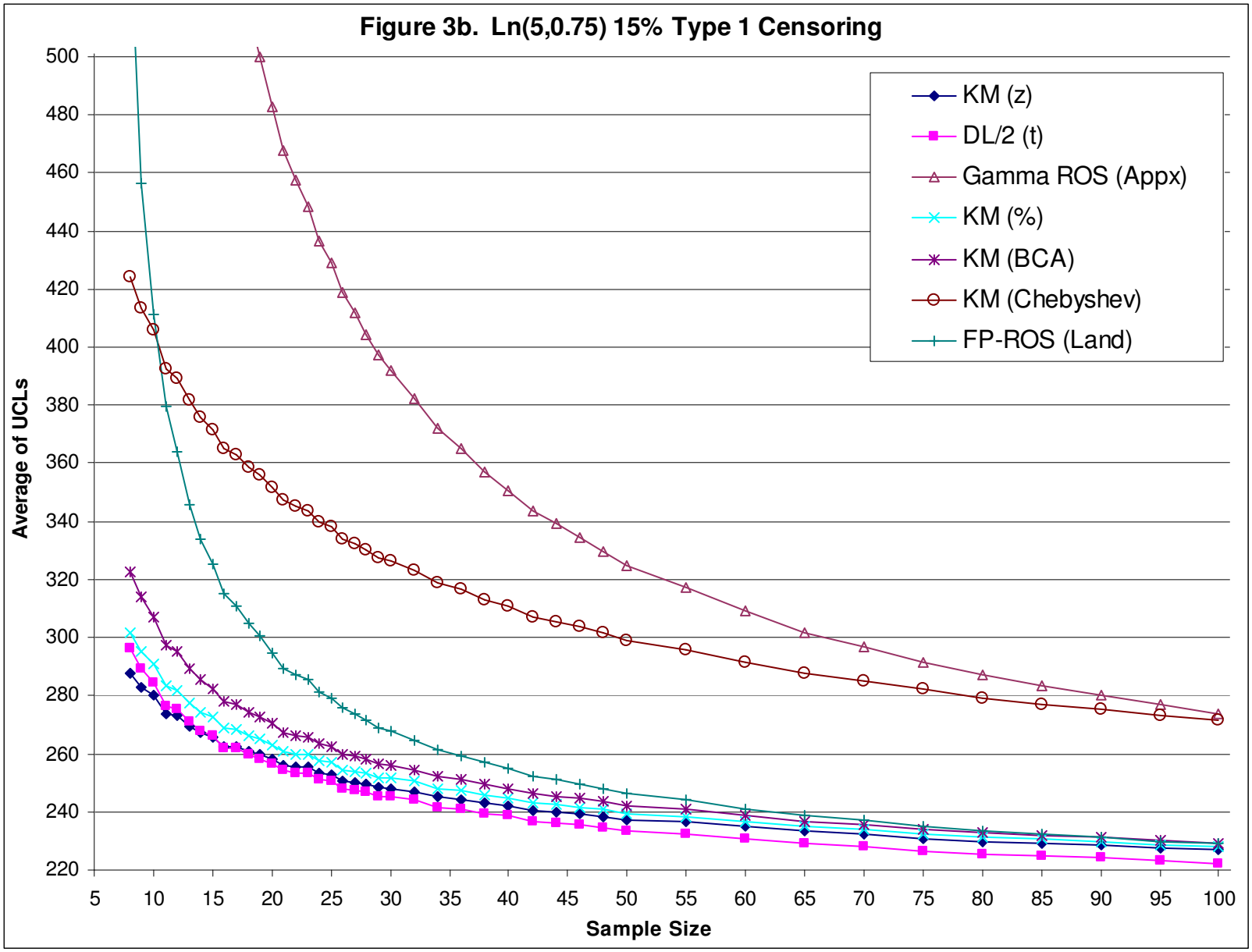
Figure 3b. Ln(5,0.75) 15% Type 1 Censoring
Average of UCLs
Sample Size
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

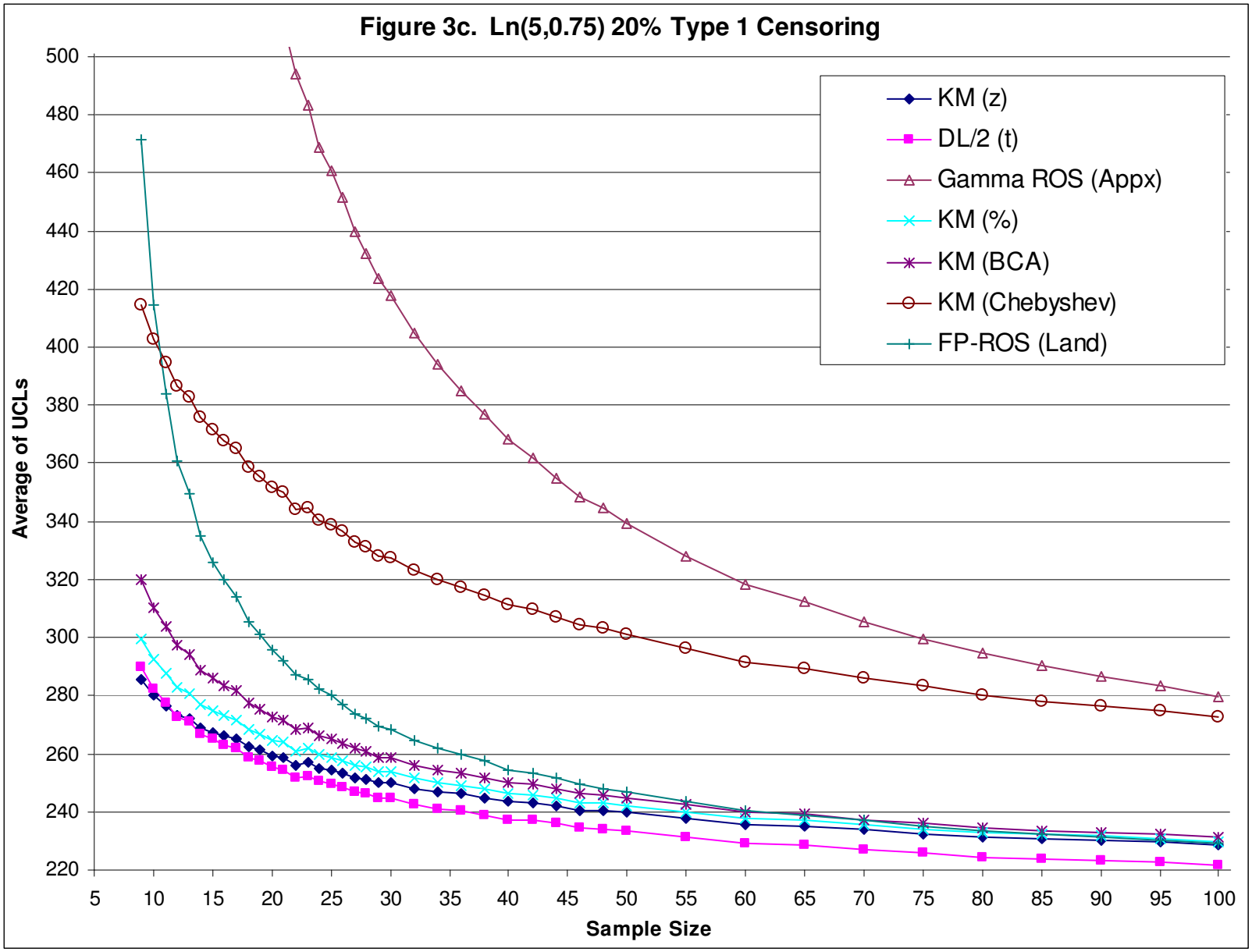
Figure 3c. Ln(5,0.75) 20% Type 1 Censoring
Average of UCLs
Sample Size
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

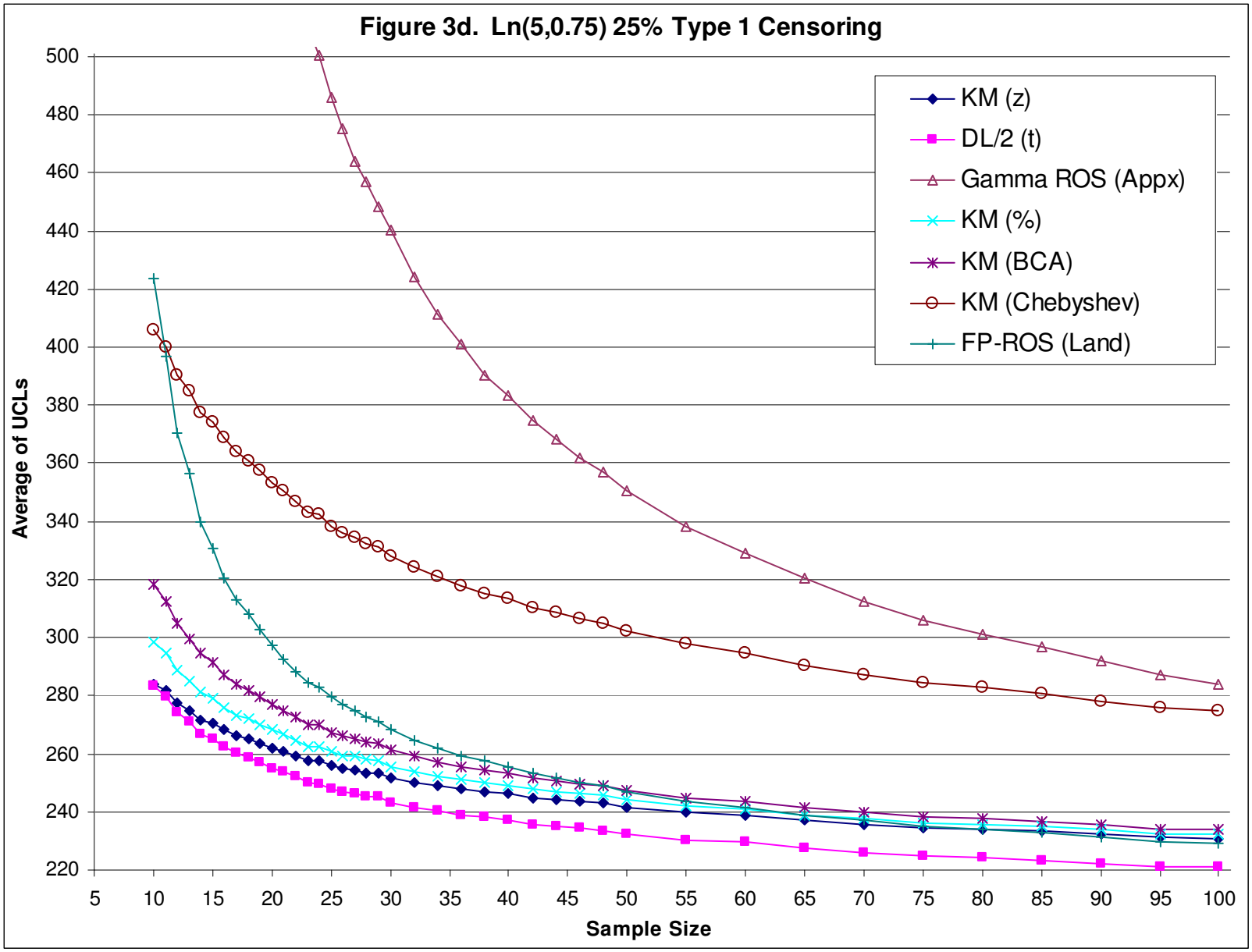
Figure 3d. Ln(5,0.75) 25% Type 1 Censoring
Average of UCLs
Sample Size
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

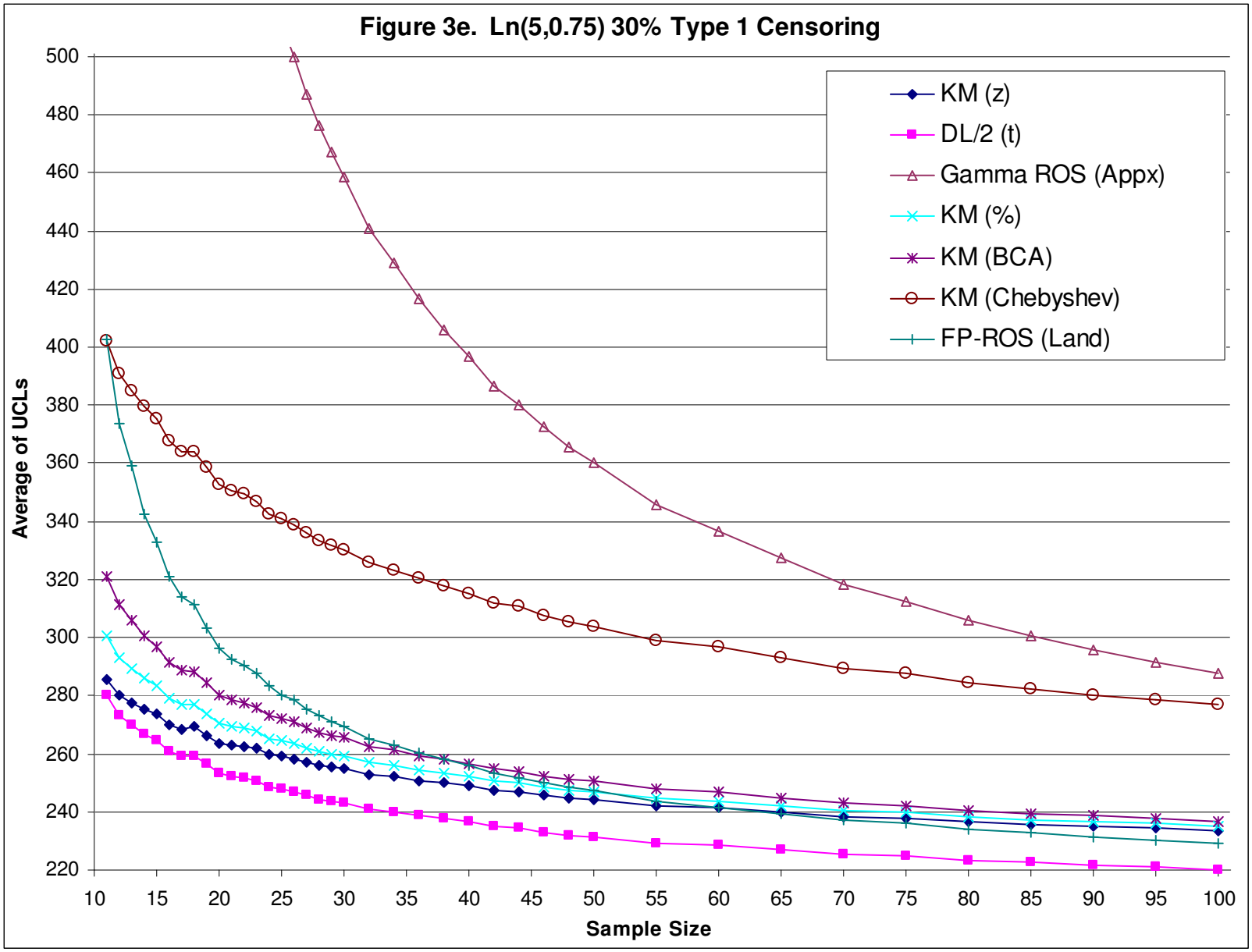
Figure 3e. Ln(5,0.75) 30% Type 1 Censoring
Average of UCLs
Sample Size
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

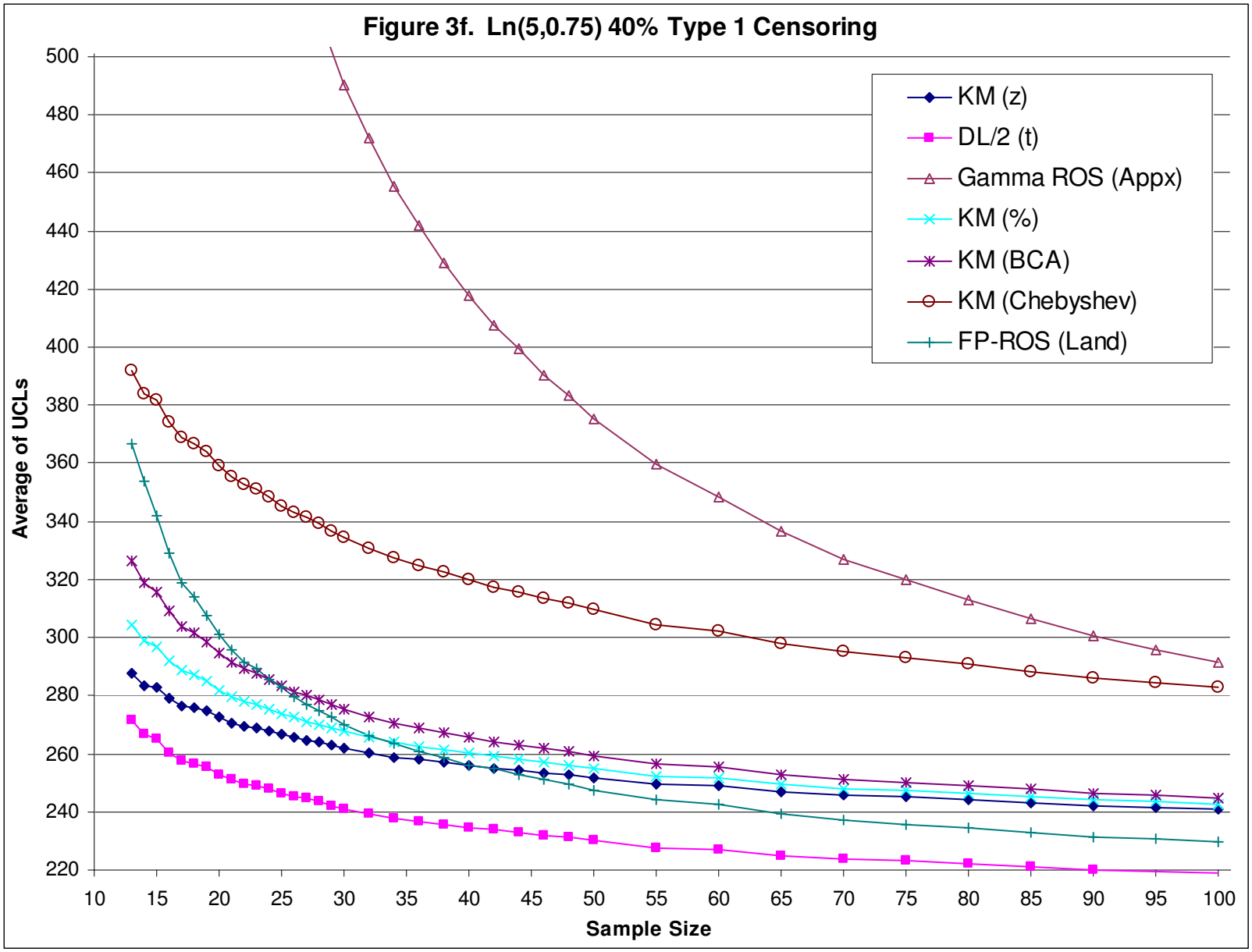
Figure 3f. Ln(5,0.75) 40% Type 1 Censoring
Average of UCLs
Sample Size
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

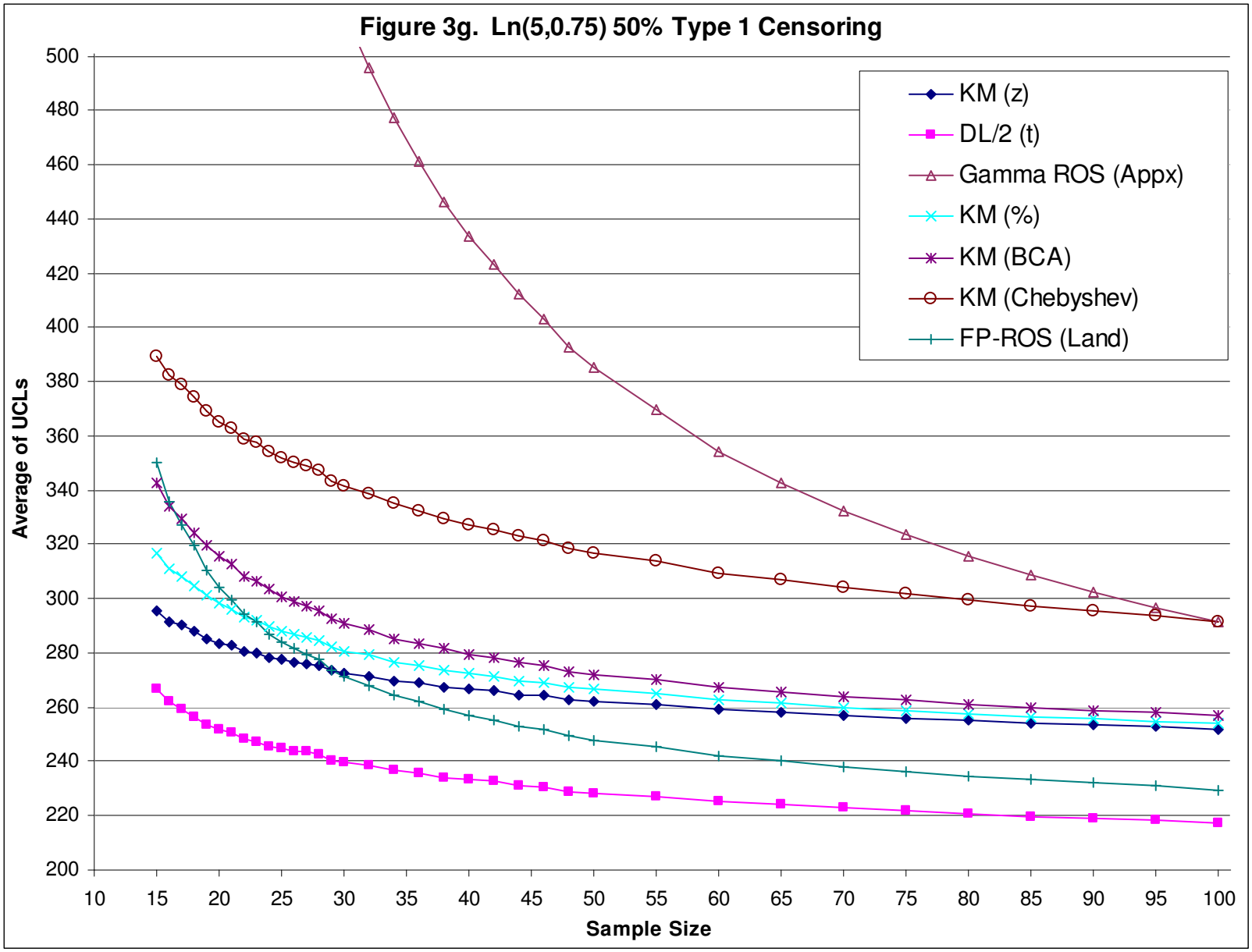
Figure 3g. Ln(5,0.75) 50% Type 1 Censoring
Average of UCLs
Sample Size
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

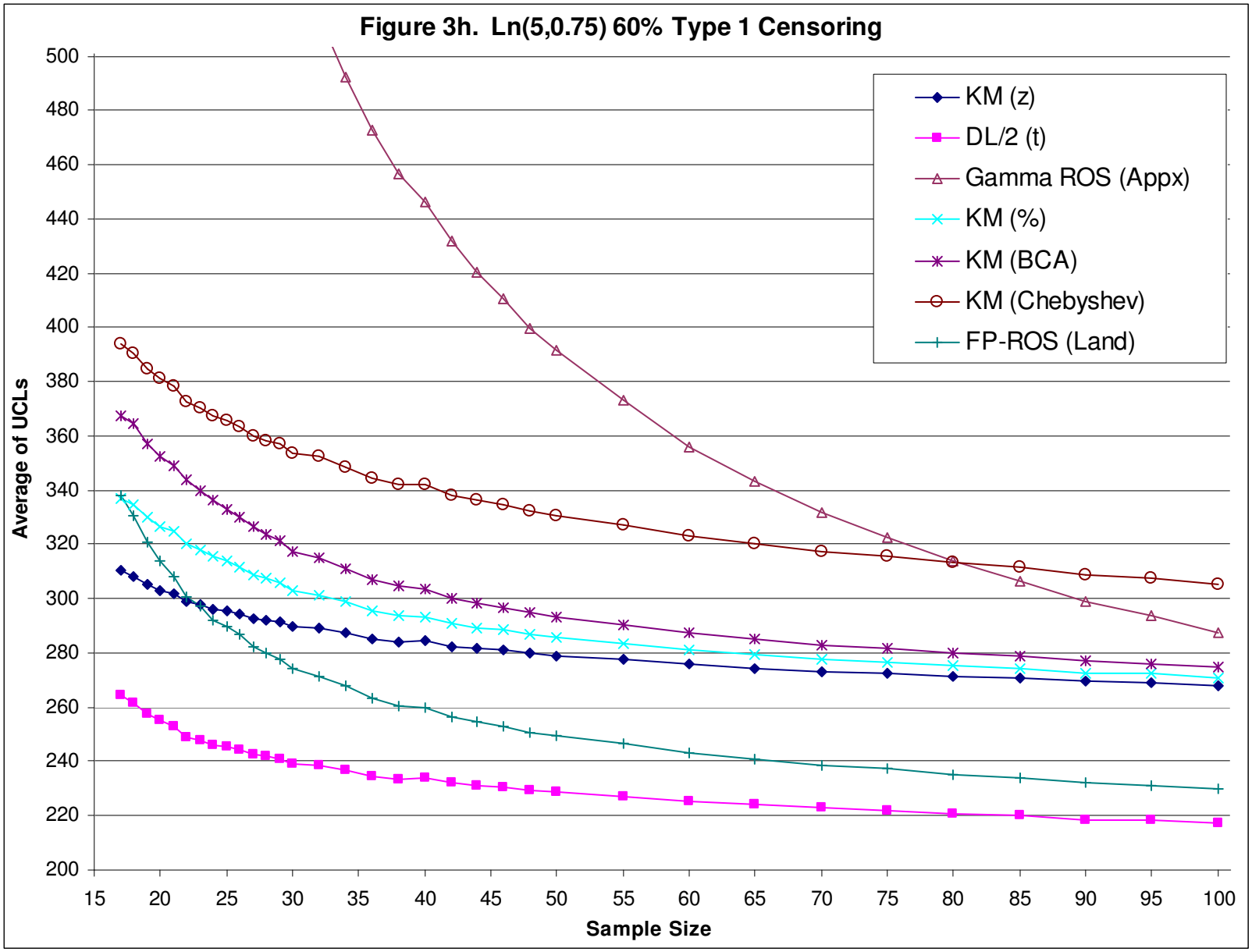
Figure 3h. Ln(5,0.75) 60% Type 1 Censoring
Average of UCLs
Sample Size
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

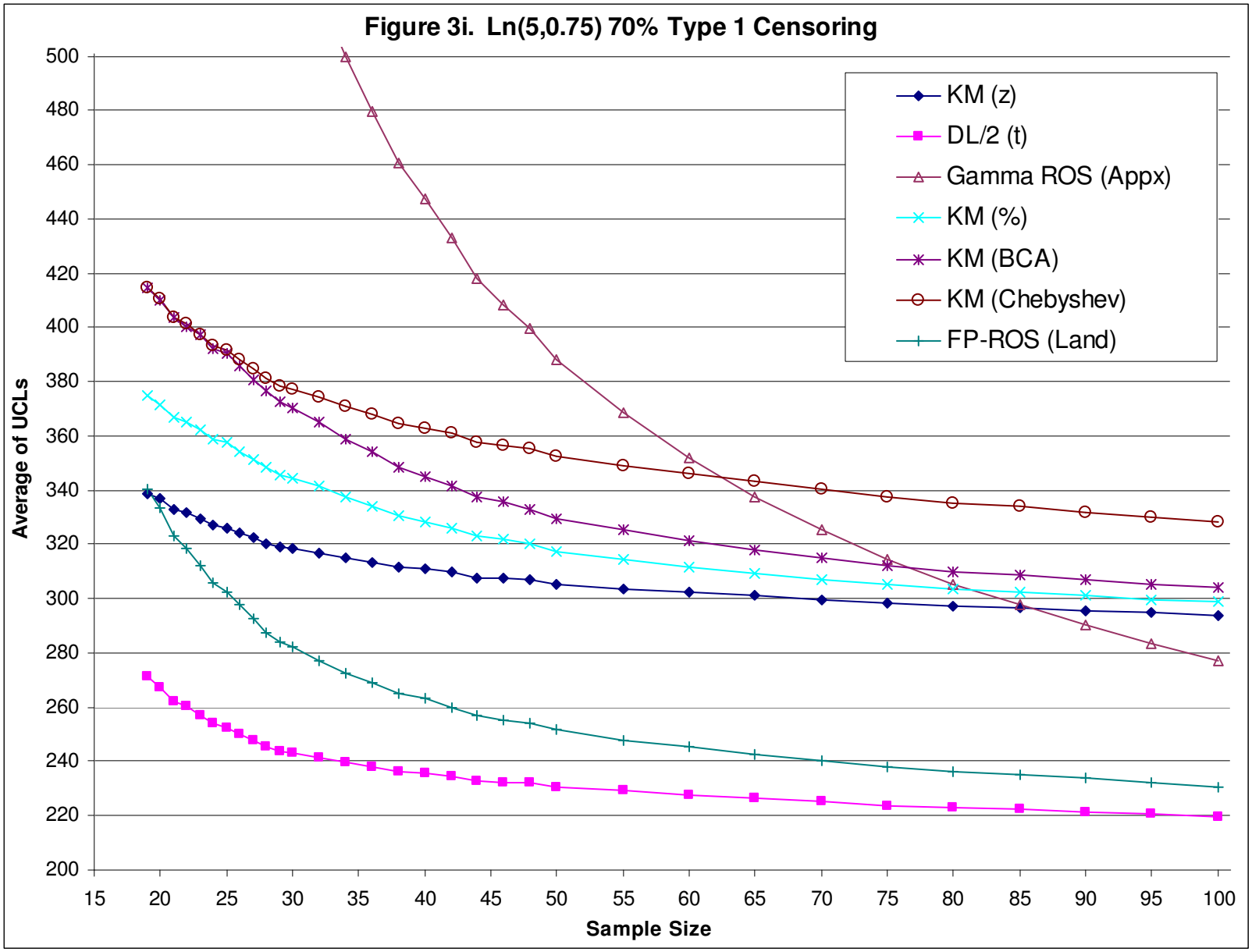
Figure 3i. Ln(5,0.75) 70% Type 1 Censoring
Average of UCLs
Sample Size
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

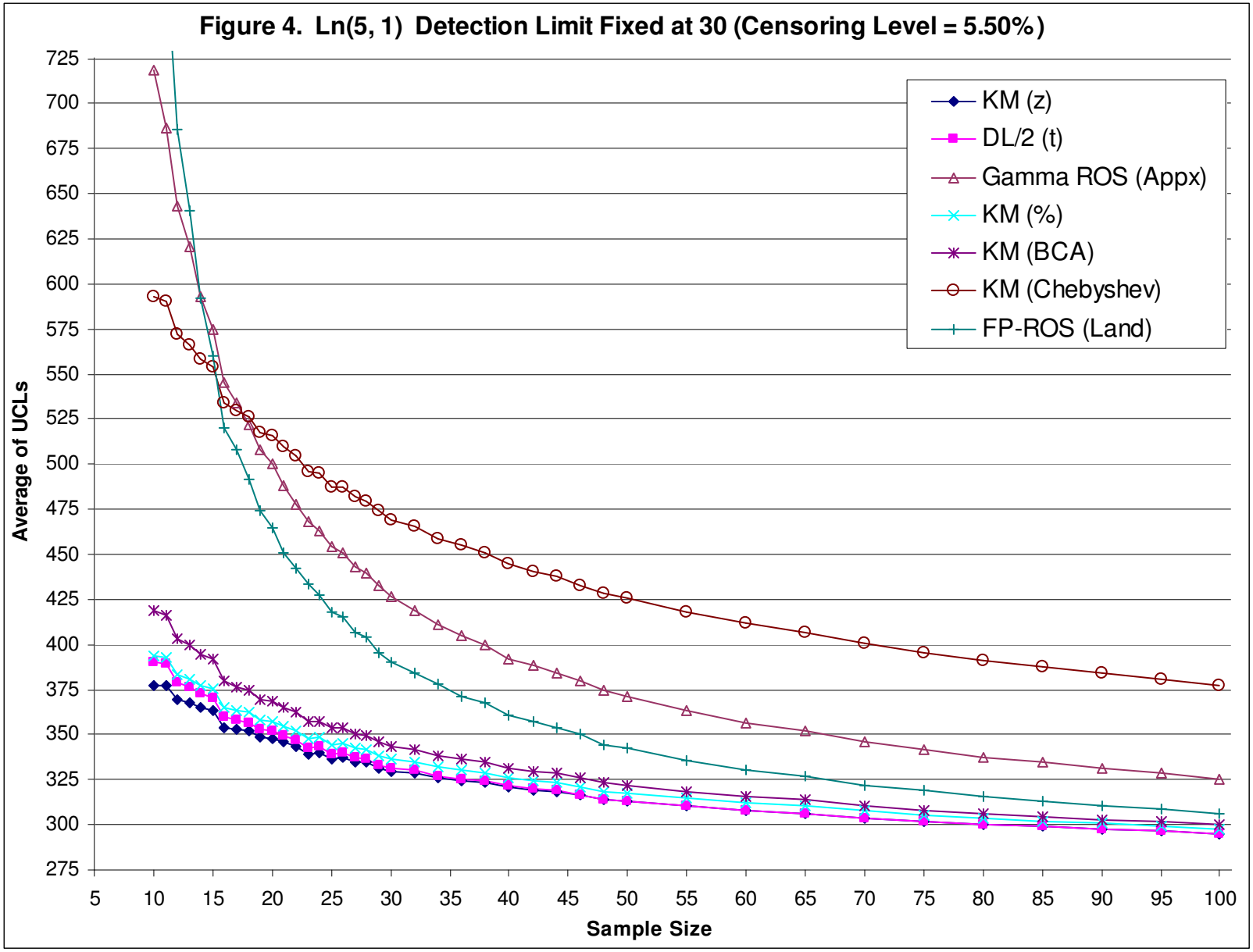
Figure 4. Ln(5, 1) Detection Limit Fixed at 30 (Censoring Level = 5.50%)
Average of UCLs
Sample Size
725
700
675
650
625
600
575
550
525
500
475
450
425
400
375
350
325
300
275
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

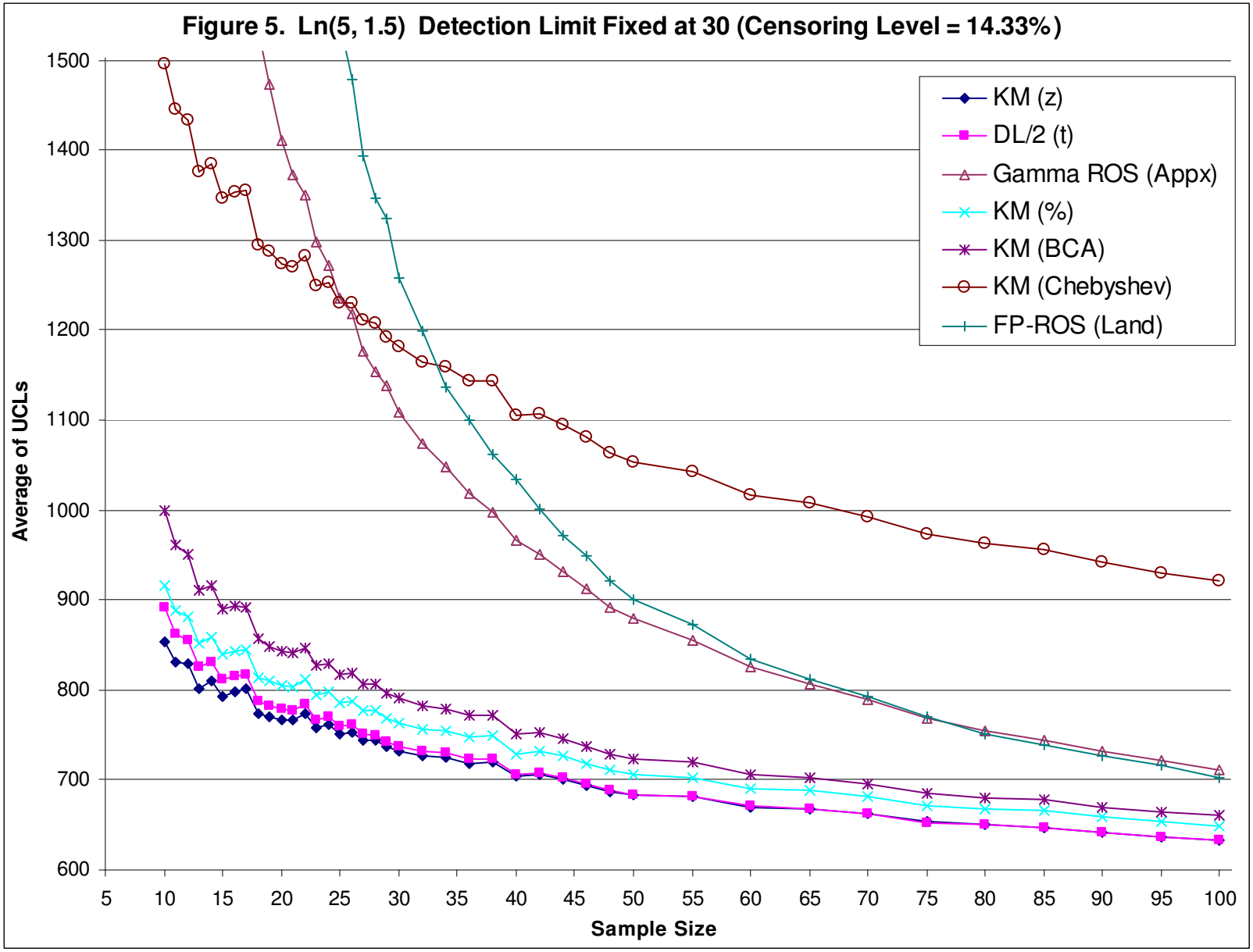
Figure 5. Ln(5, 1.5) Detection Limit Fixed at 30 (Censoring Level = 14.33%)
Average of UCLs
Sample Size
1500
1400
1300
1200
1100
1000
900
800
700
600
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

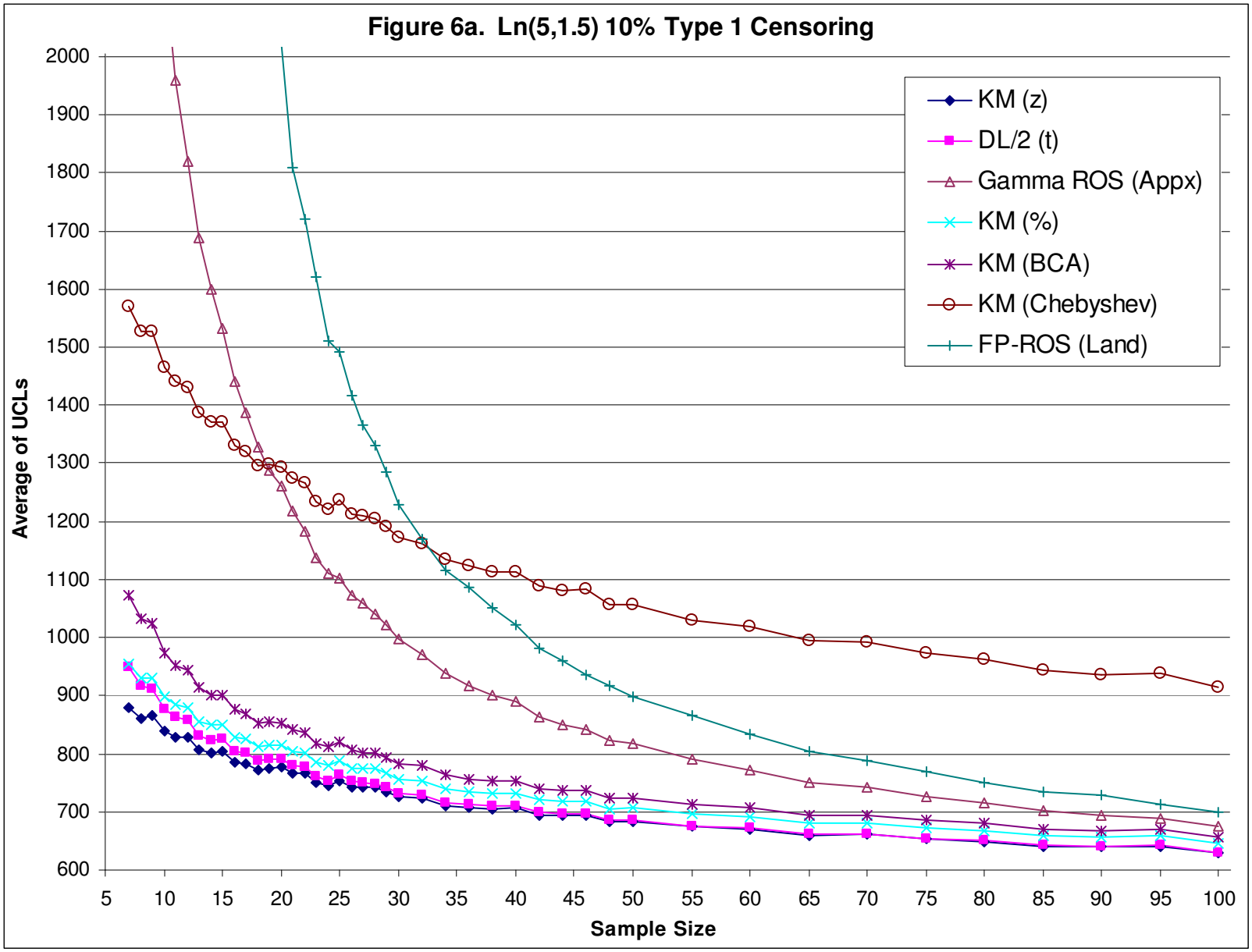
Figure 6a. Ln(5,1.5) 10% Type 1 Censoring
Average of UCLs
Sample Size
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

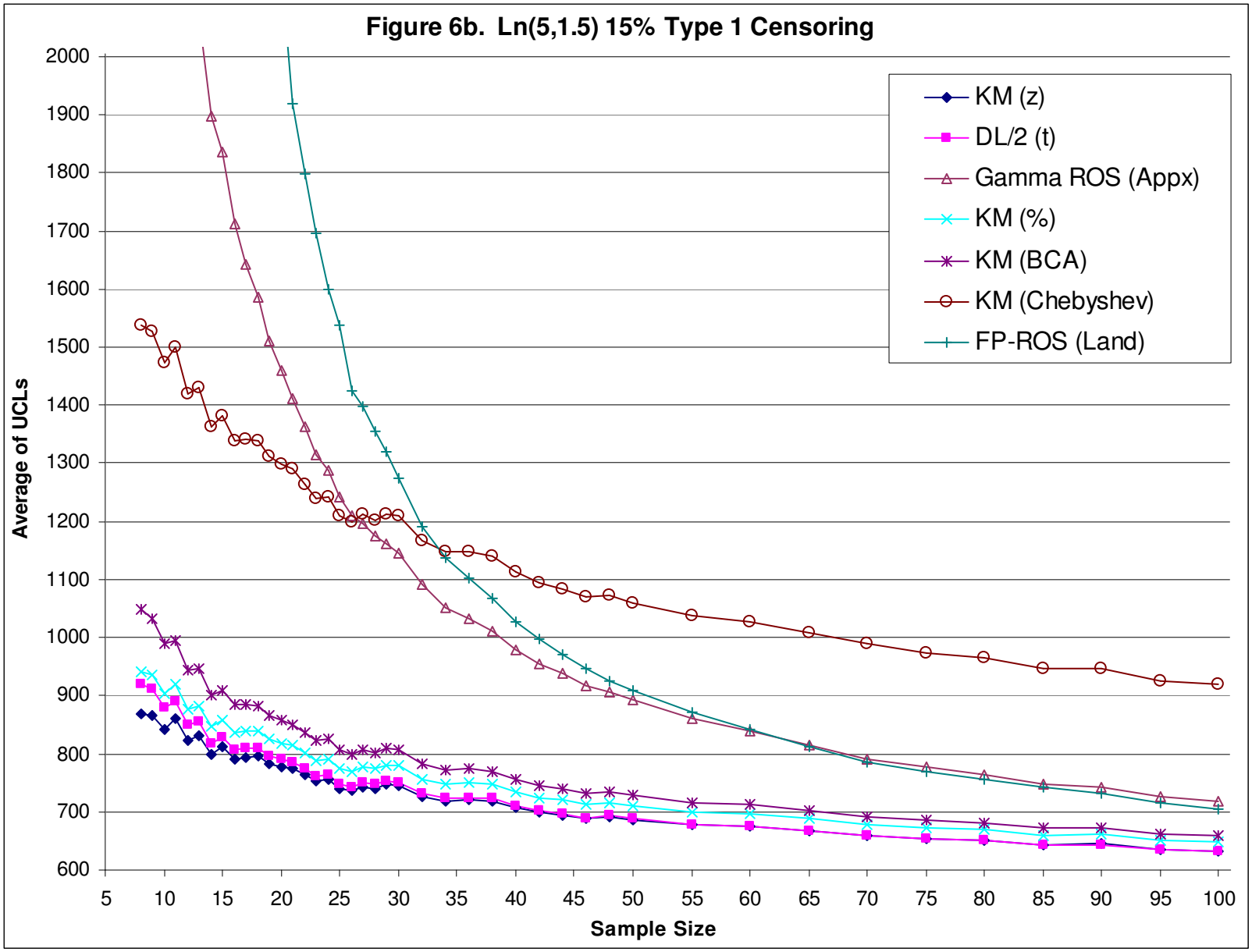
Figure 6b. Ln(5,1.5) 15% Type 1 Censoring
Average of UCLs
Sample Size
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

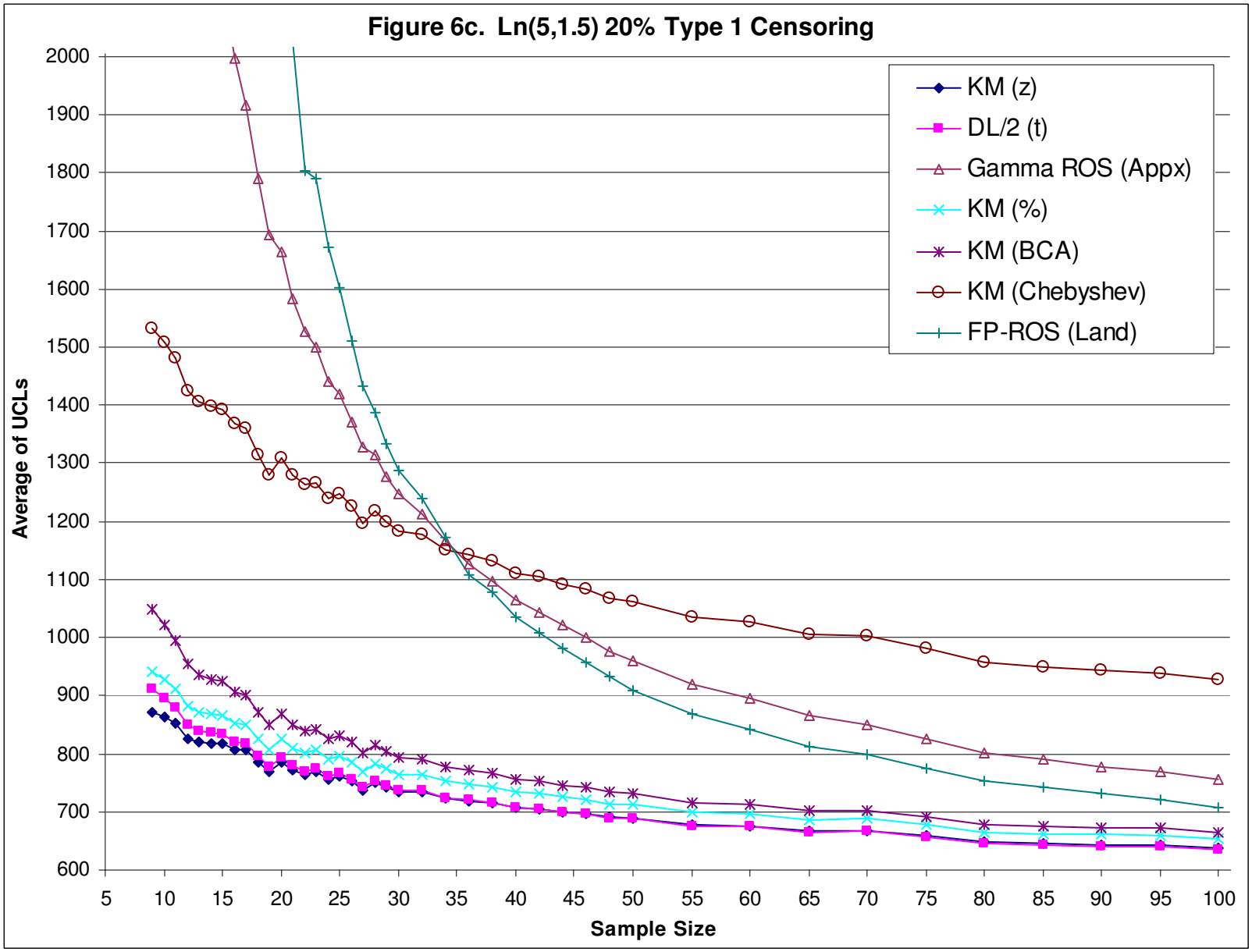
Figure 6c. Ln(5,1.5) 20% Type 1 Censoring
Average of UCLs
Sample Size
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

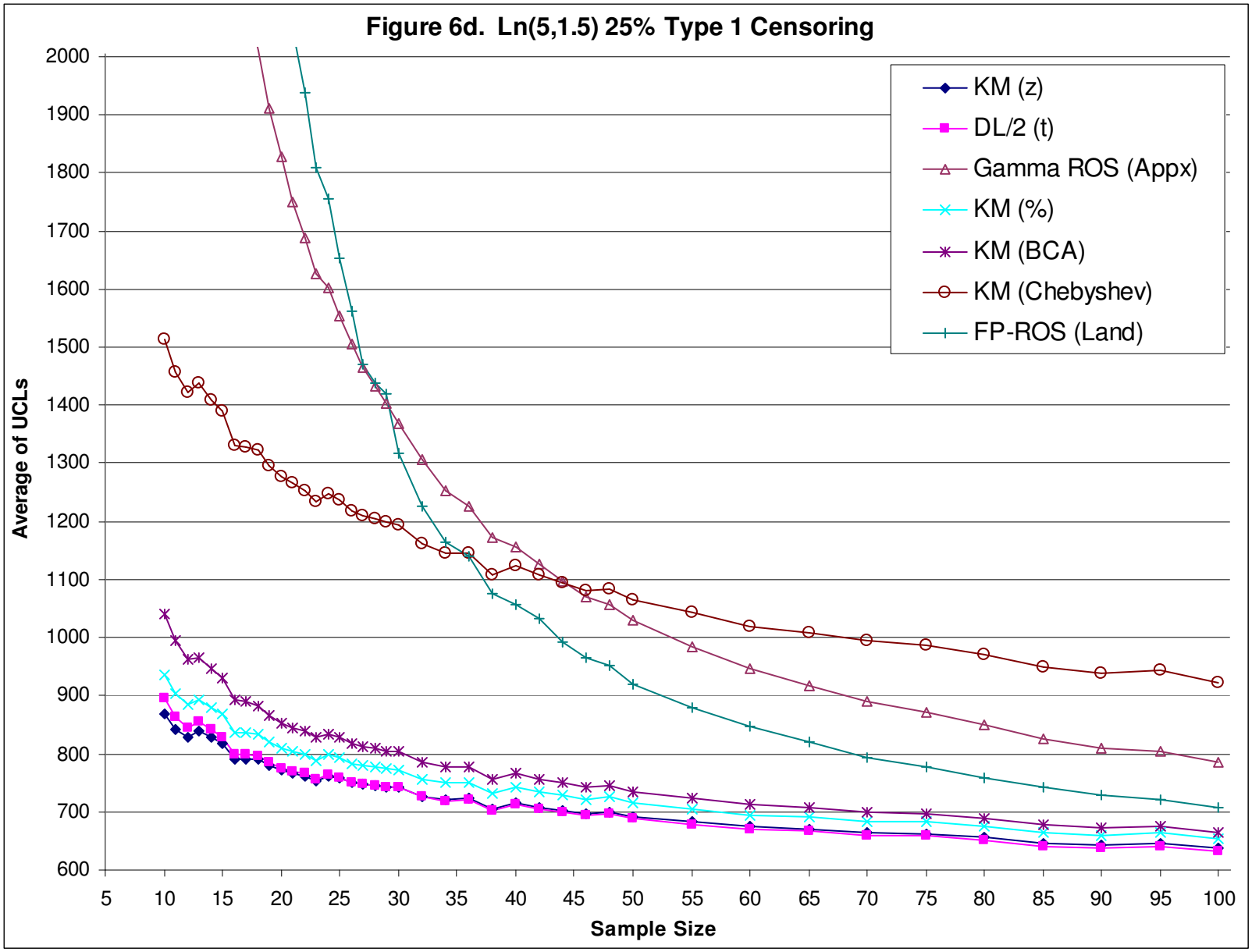
Figure 6d. Ln(5,1.5) 25% Type 1 Censoring
Average of UCLs
Sample Size
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

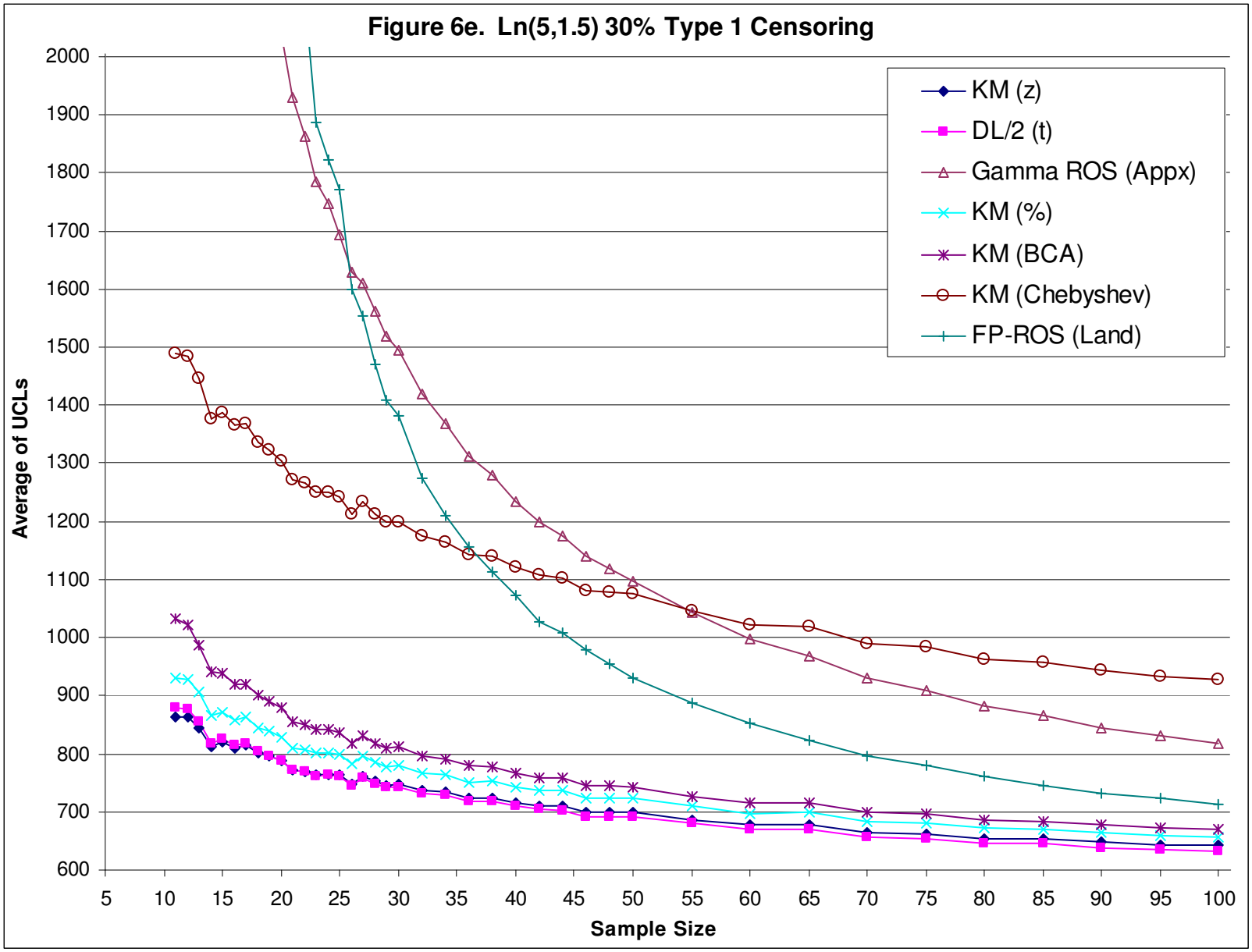
Figure 6e. Ln(5,1.5) 30% Type 1 Censoring
Average of UCLs
Sample Size
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

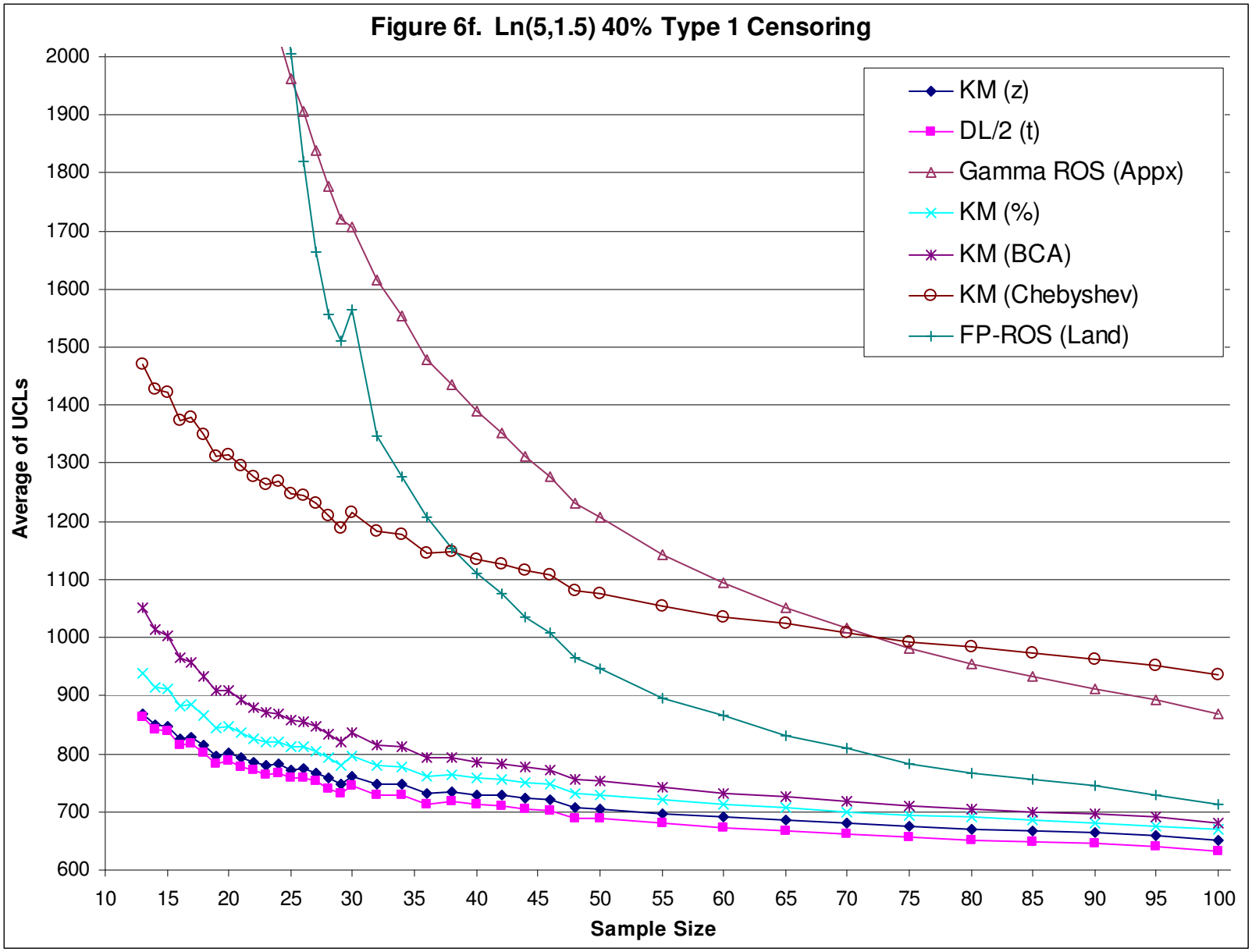
Figure 6f. Ln(5,1.5) 40% Type 1 Censoring
Average of UCLs
Sample Size
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

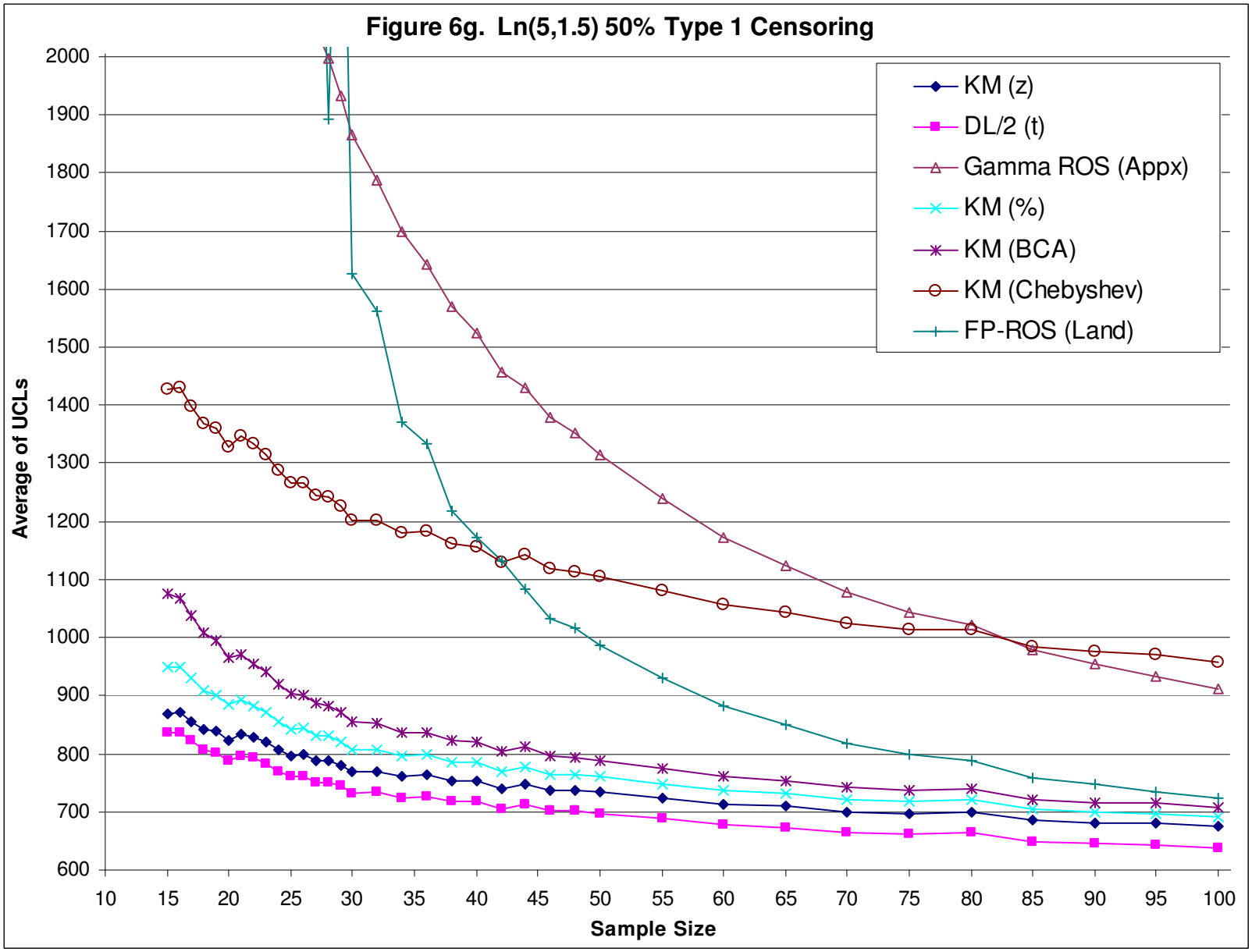
Figure 6g. Ln(5,1.5) 50% Type 1 Censoring
Average of UCLs
Sample Size
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

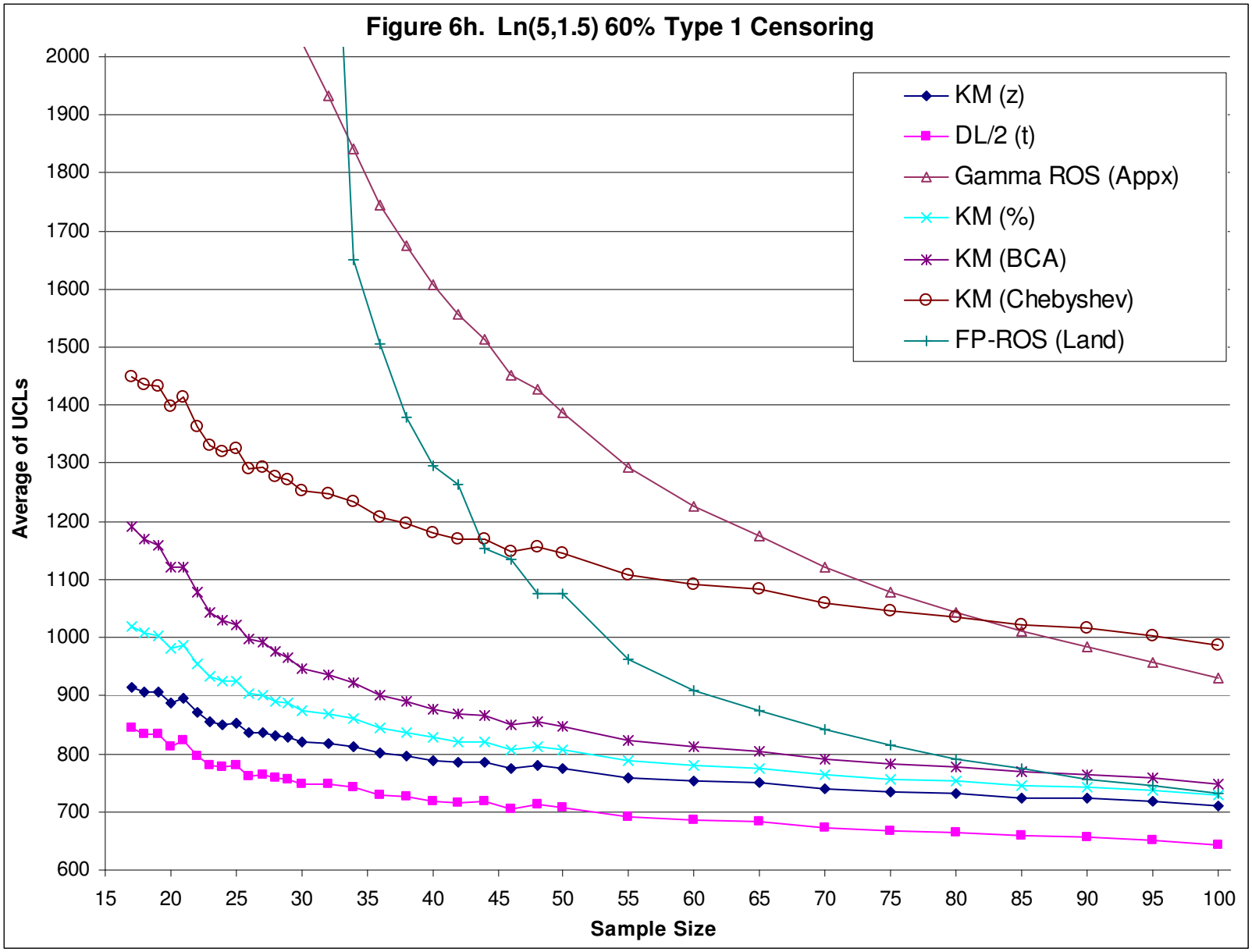
Figure 6h. Ln(5,1.5) 60% Type 1 Censoring
Average of UCLs
Sample Size
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

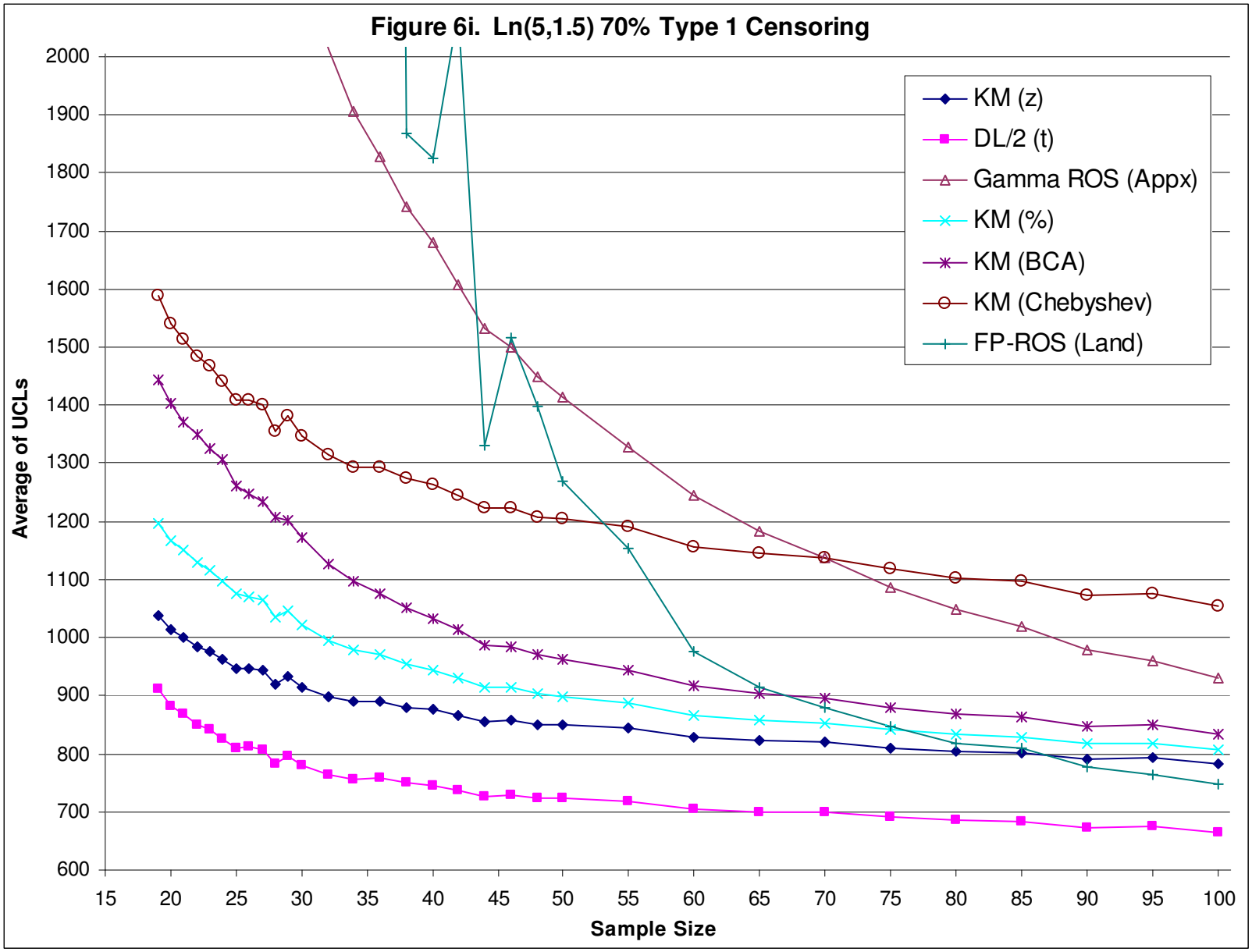
Figure 6i. Ln(5,1.5) 70% Type 1 Censoring
Average of UCLs
Sample Size
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

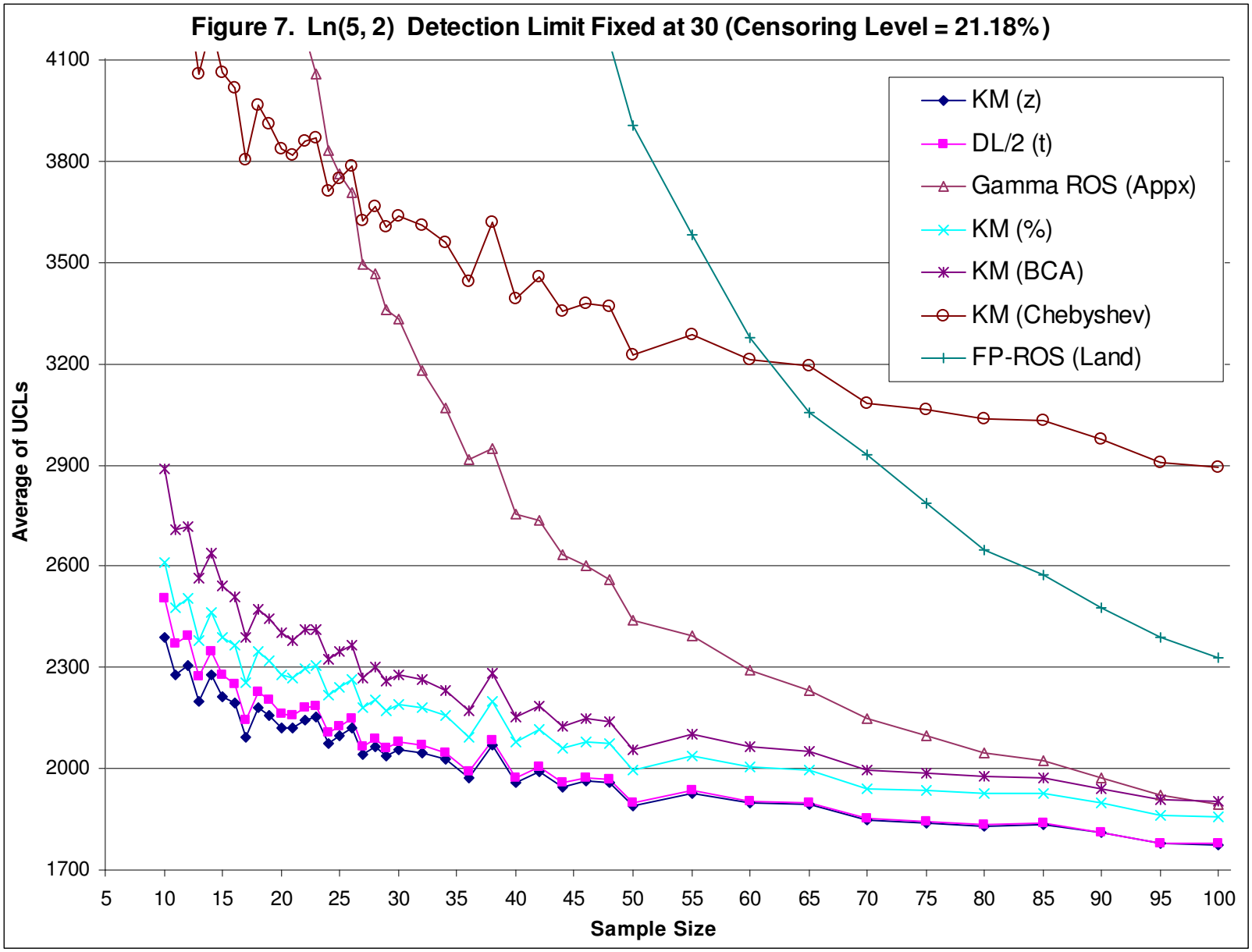
Figure 7. Ln(5, 2) Detection Limit Fixed at 30 (Censoring Level = 21.18%)
Average of UCLs
Sample Size
4100
3800
3500
3200
2900
2600
2300
2000
1700
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

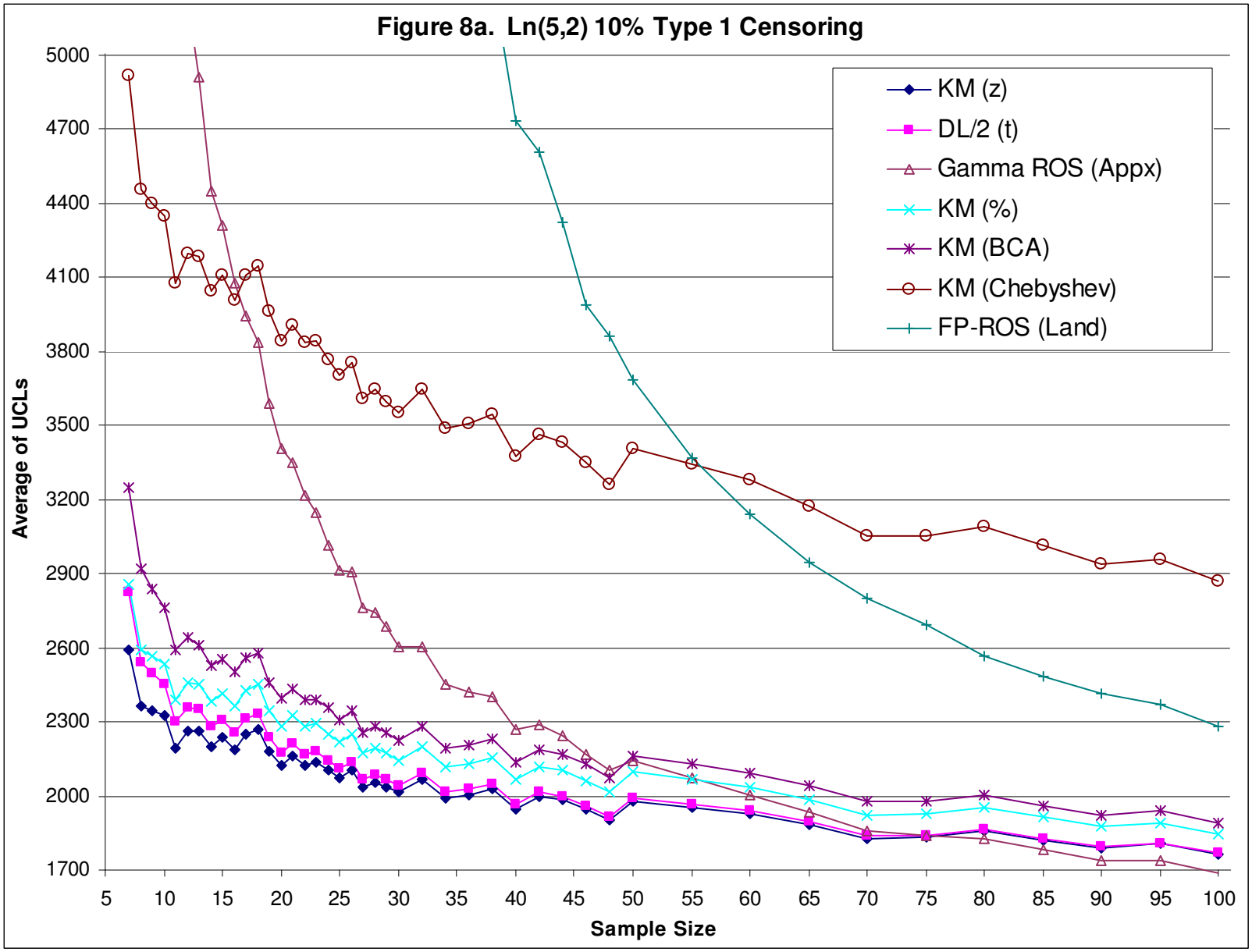
Figure 8a. Ln(5,2) 10% Type 1 Censoring
Average of UCLs
5000
4700
4400
4100
3800
3500
3200
2900
2600
2300
2000
1700
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
Sample Size
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

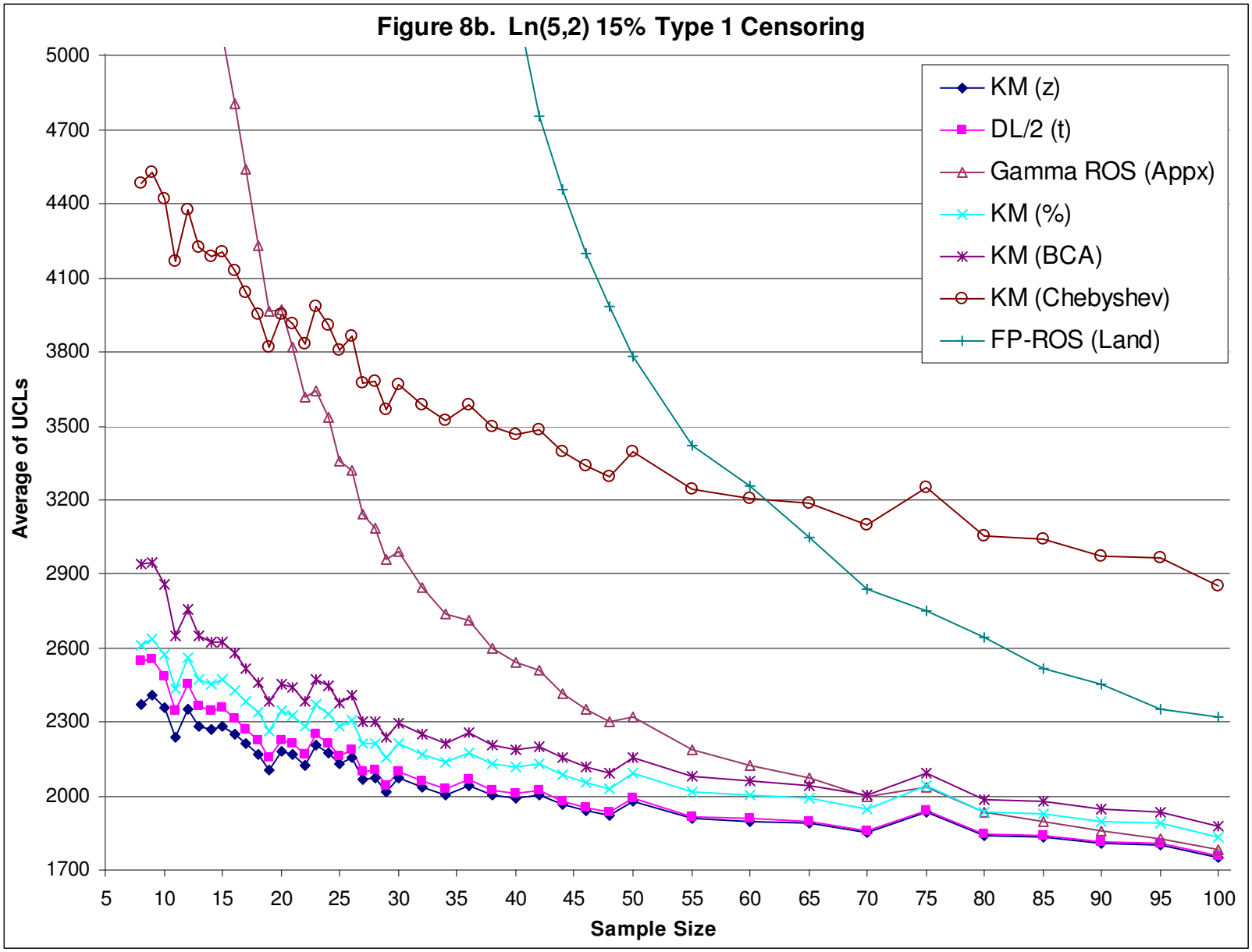
Figure 8b. Ln(5,2) 15% Type 1 Censoring
Average of UCLs
Sample Size
5000
4700
4400
4100
3800
3500
3200
2900
2600
2300
2000
1700
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

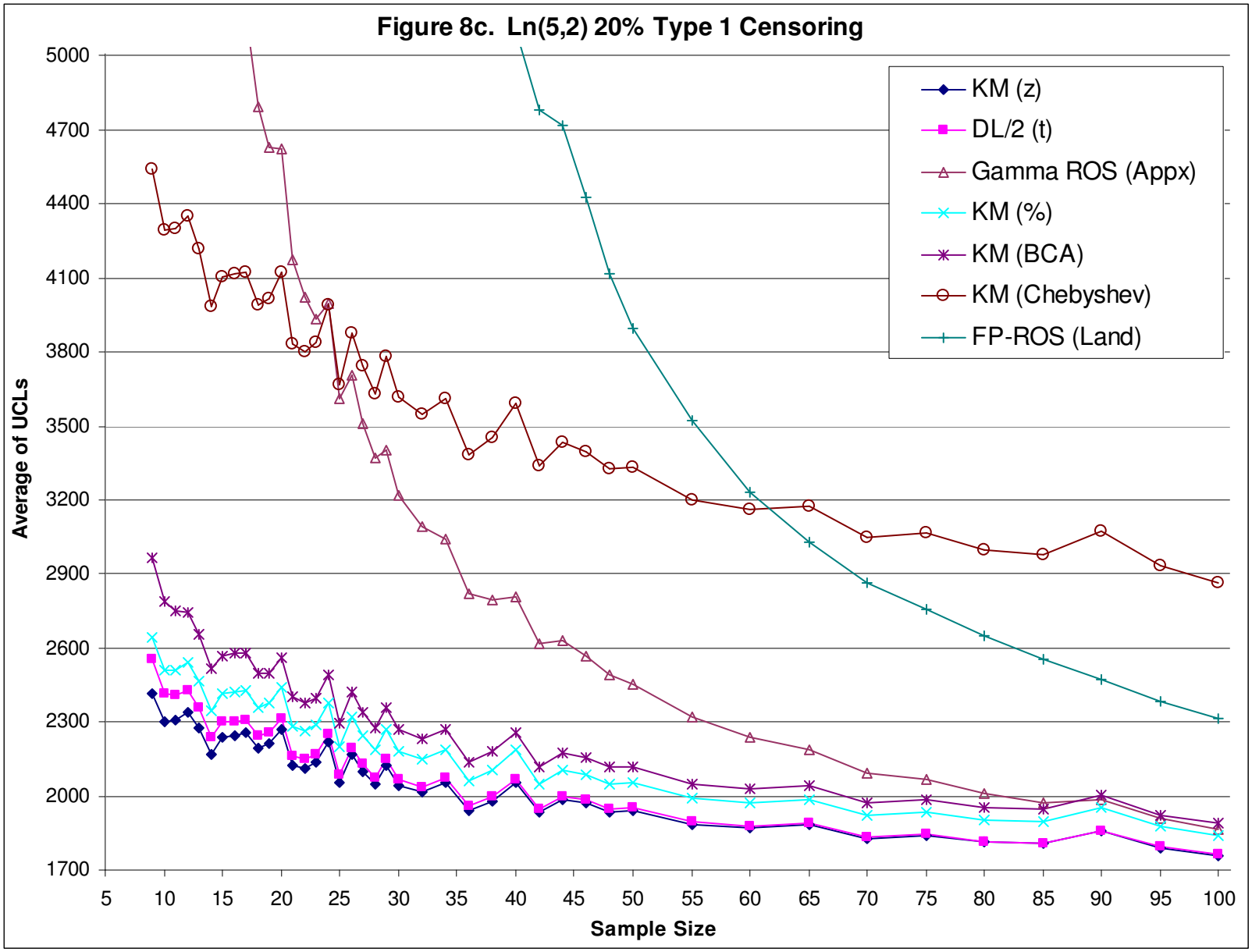
Figure 8c. Ln(5,2) 20% Type 1 Censoring
Average of UCLs
Sample Size
5000
4700
4400
4100
3800
3500
3200
2900
2600
2300
2000
1700
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

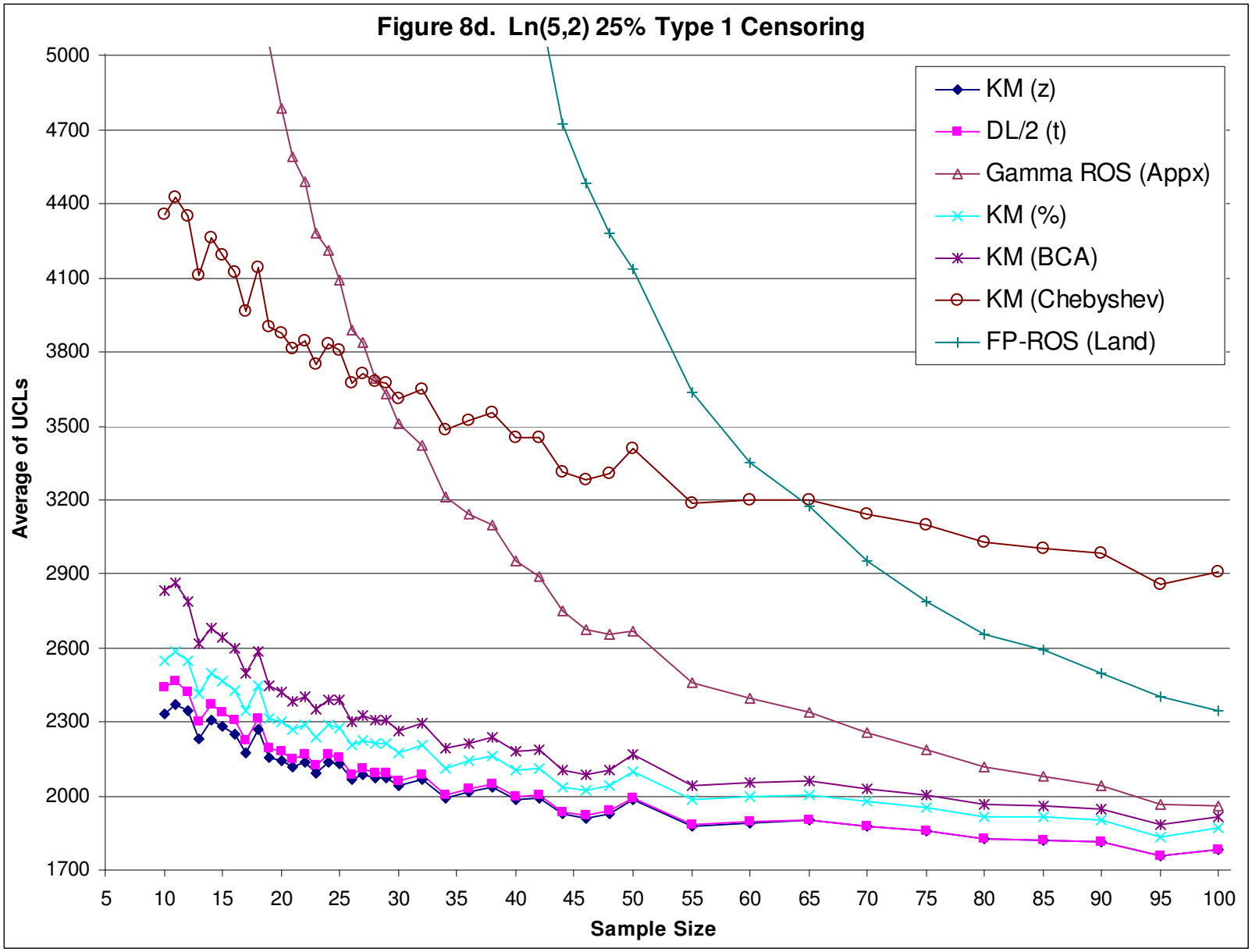
Figure 8d. Ln(5,2) 25% Type 1 Censoring
Average of UCLs
Sample Size
5000
4700
4400
4100
3800
3500
3200
2900
2600
2300
2000
1700
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

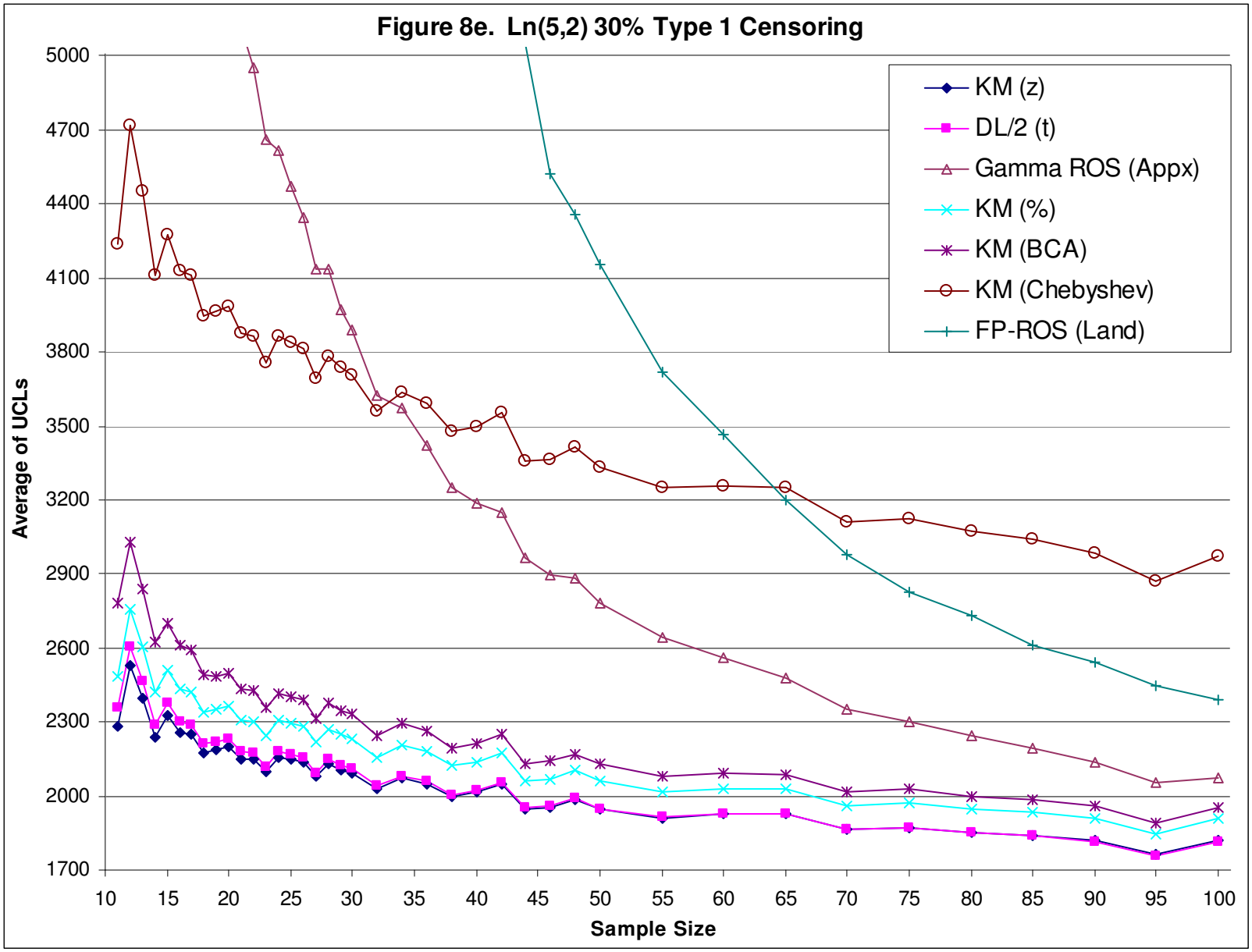
Figure 8e. Ln(5,2) 30% Type 1 Censoring
Average of UCLs
5000
4700
4400
4100
3800
3500
3200
2900
2600
2300
2000
1700
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
Sample Size
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

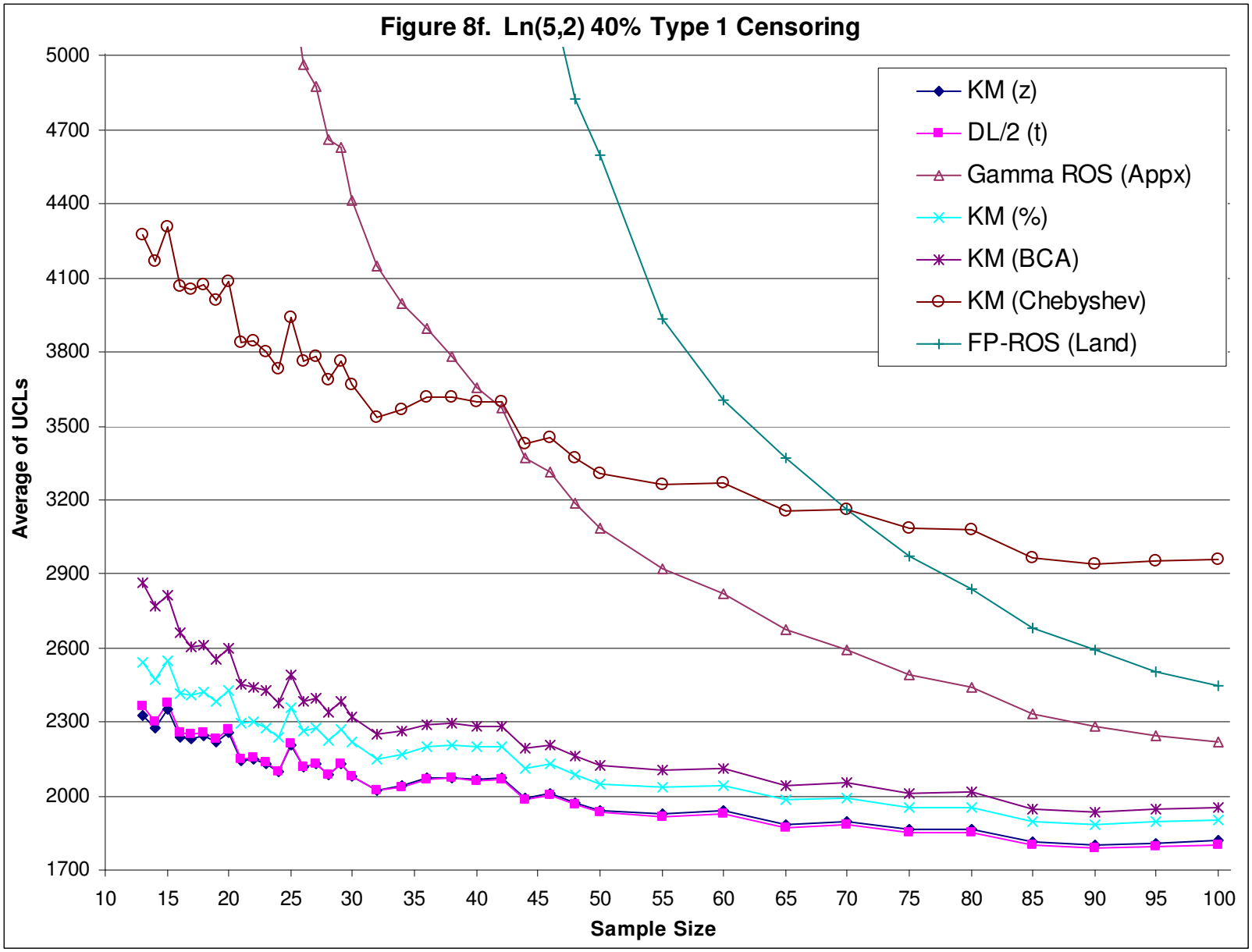
Figure 8f. Ln(5,2) 40% Type 1 Censoring
Average of UCLs
5000
4700
4400
4100
3800
3500
3200
2900
2600
2300
2000
1700
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
Sample Size
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

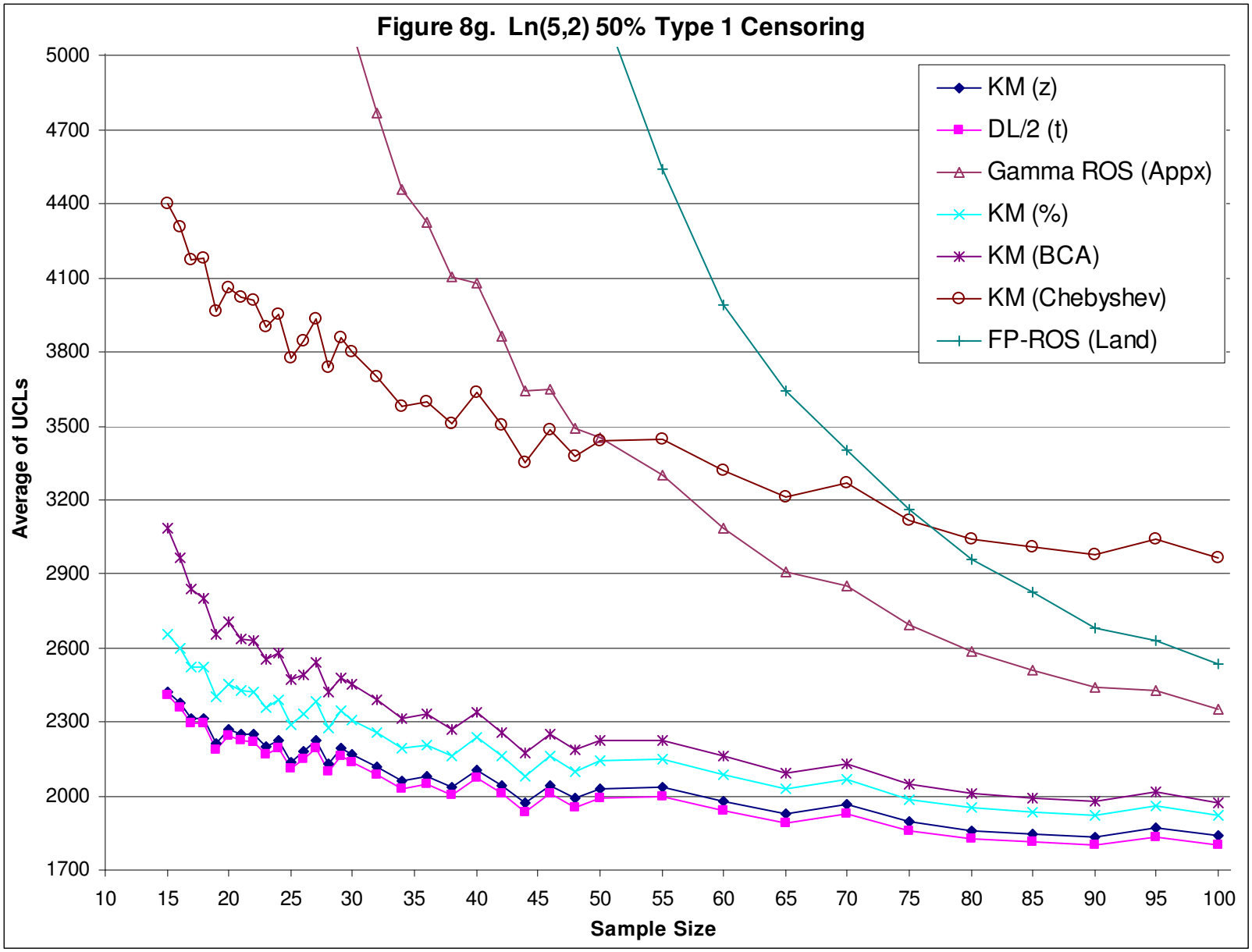
Figure 8g. Ln(5,2) 50% Type 1 Censoring
Average of UCLs
Sample Size
5000
4700
4400
4100
3800
3500
3200
2900
2600
2300
2000
1700
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

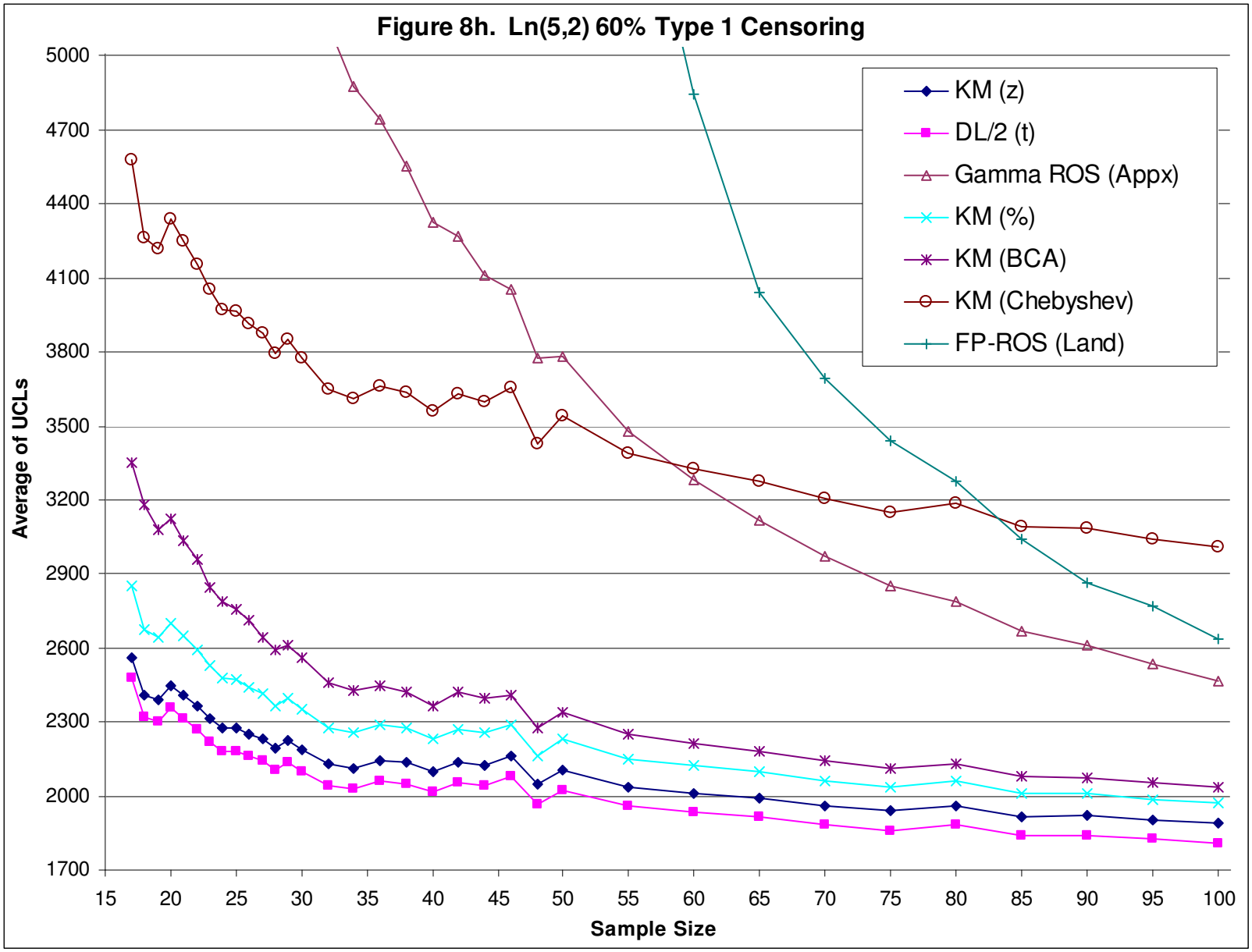
Figure 8h. Ln(5,2) 60% Type 1 Censoring
Average of UCLs
5000
4700
4400
4100
3800
3500
3200
2900
2600
2300
2000
1700
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
Sample Size
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

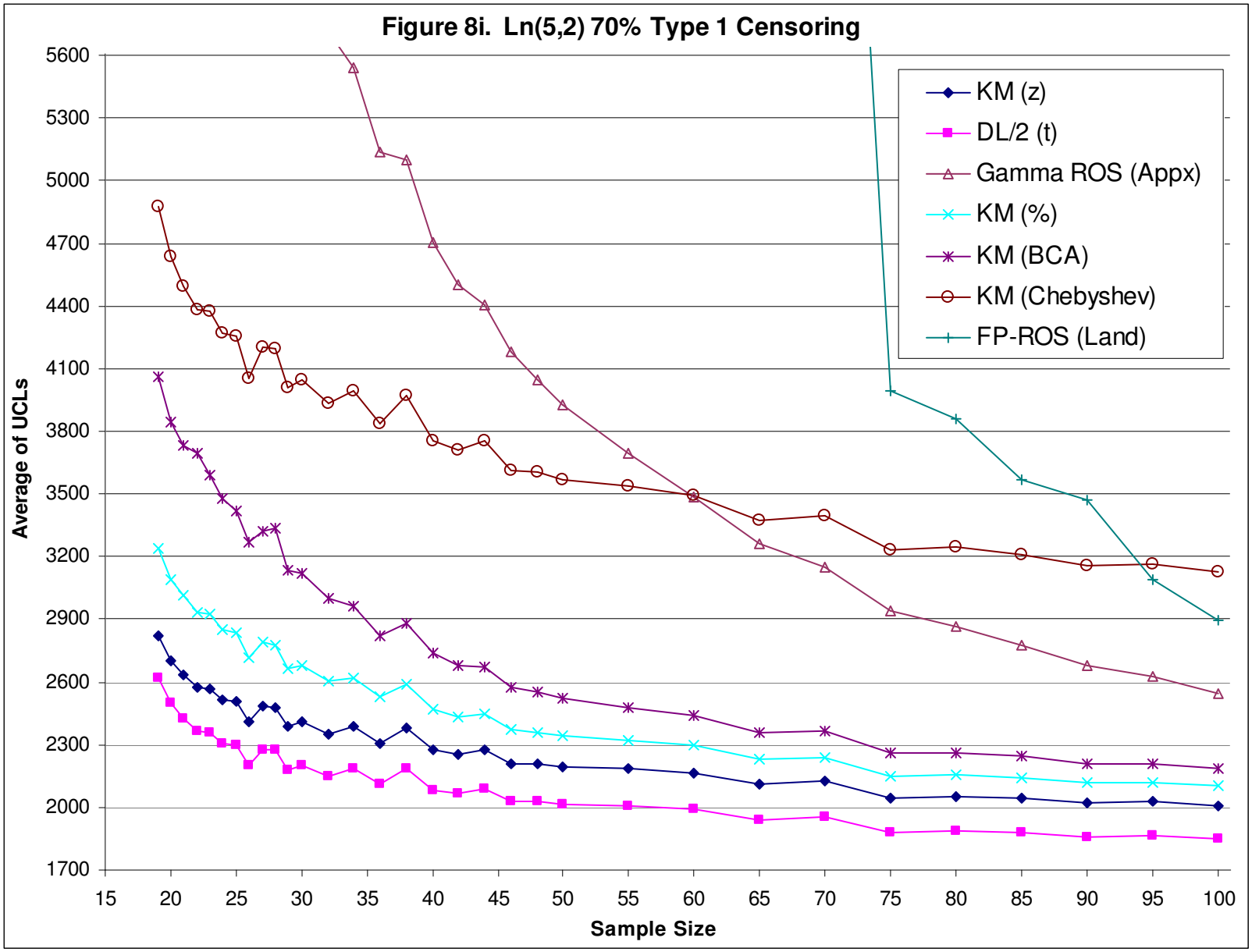
Figure 8i. Ln(5,2) 70% Type 1 Censoring
Average of UCLs
Sample Size
5600
5300
5000
4700
4400
4100
3800
3500
3200
2900
2600
2300
2000
1700
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
FP-ROS (Land)

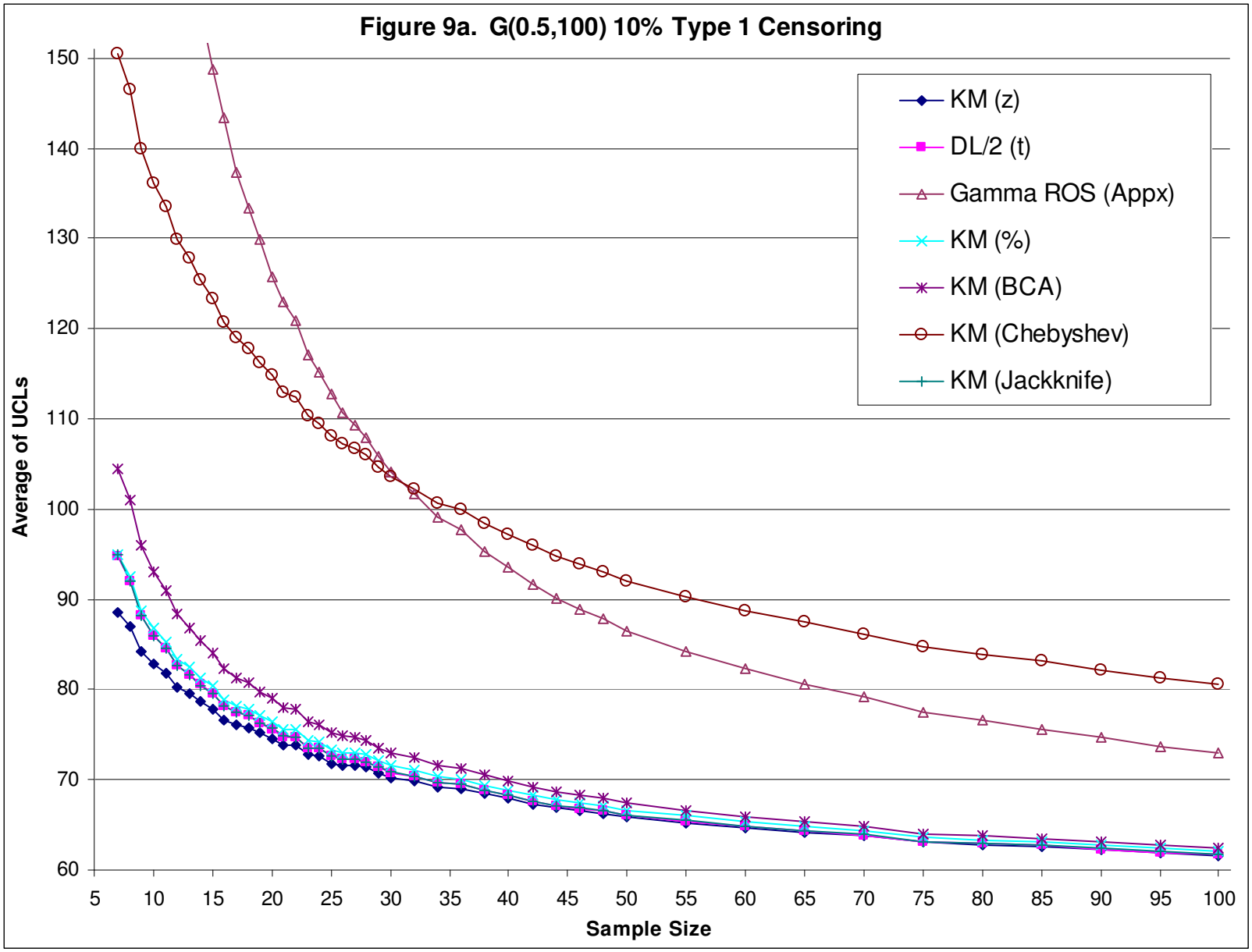
Figure 9a. G(0.5,100) 10% Type 1 Censoring
Average of UCLs
Sample Size
150
140
130
120
110
100
90
80
70
60
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

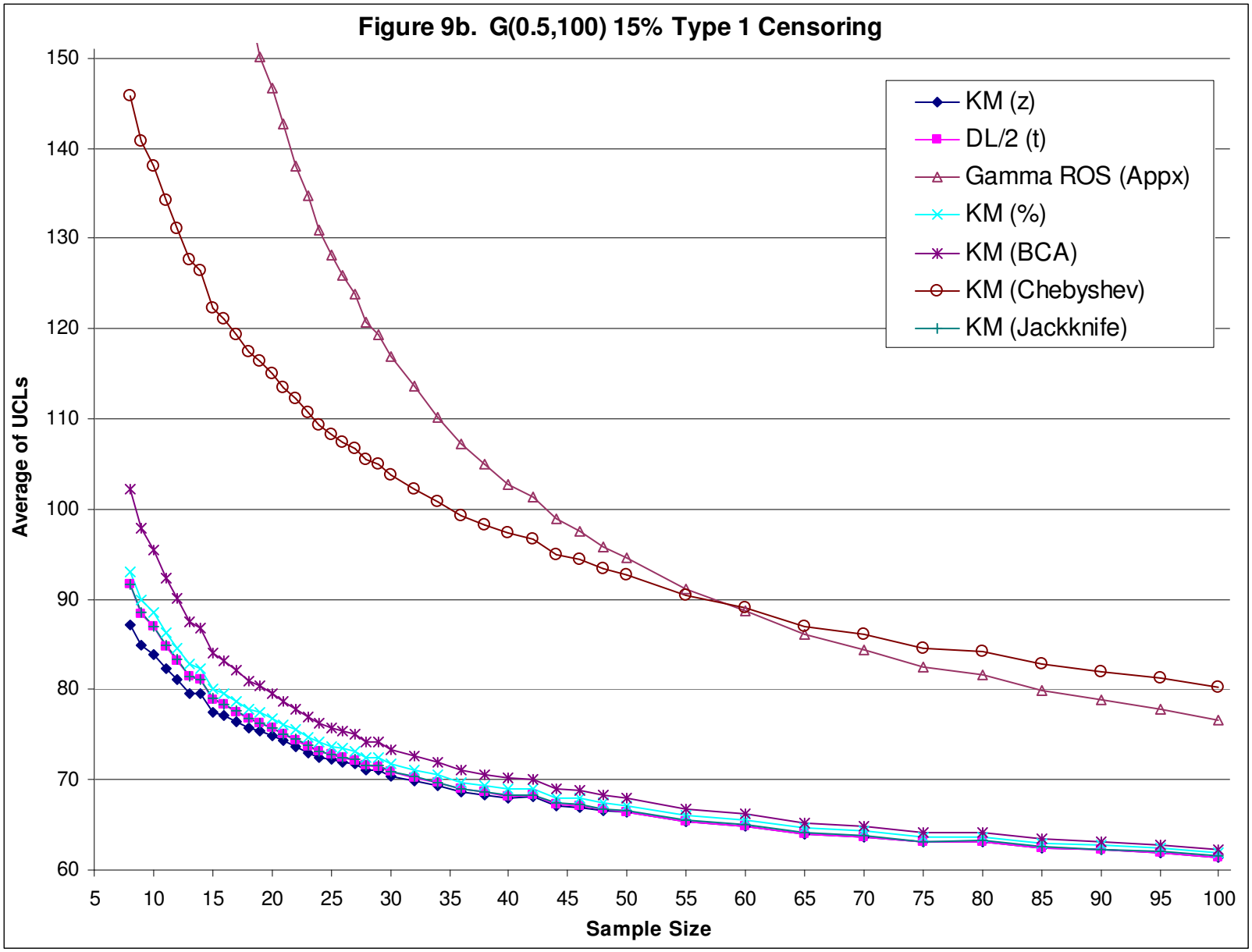
Figure 9b. G(0.5,100) 15% Type 1 Censoring
Average of UCLs
Sample Size
150
140
130
120
110
100
90
80
70
60
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

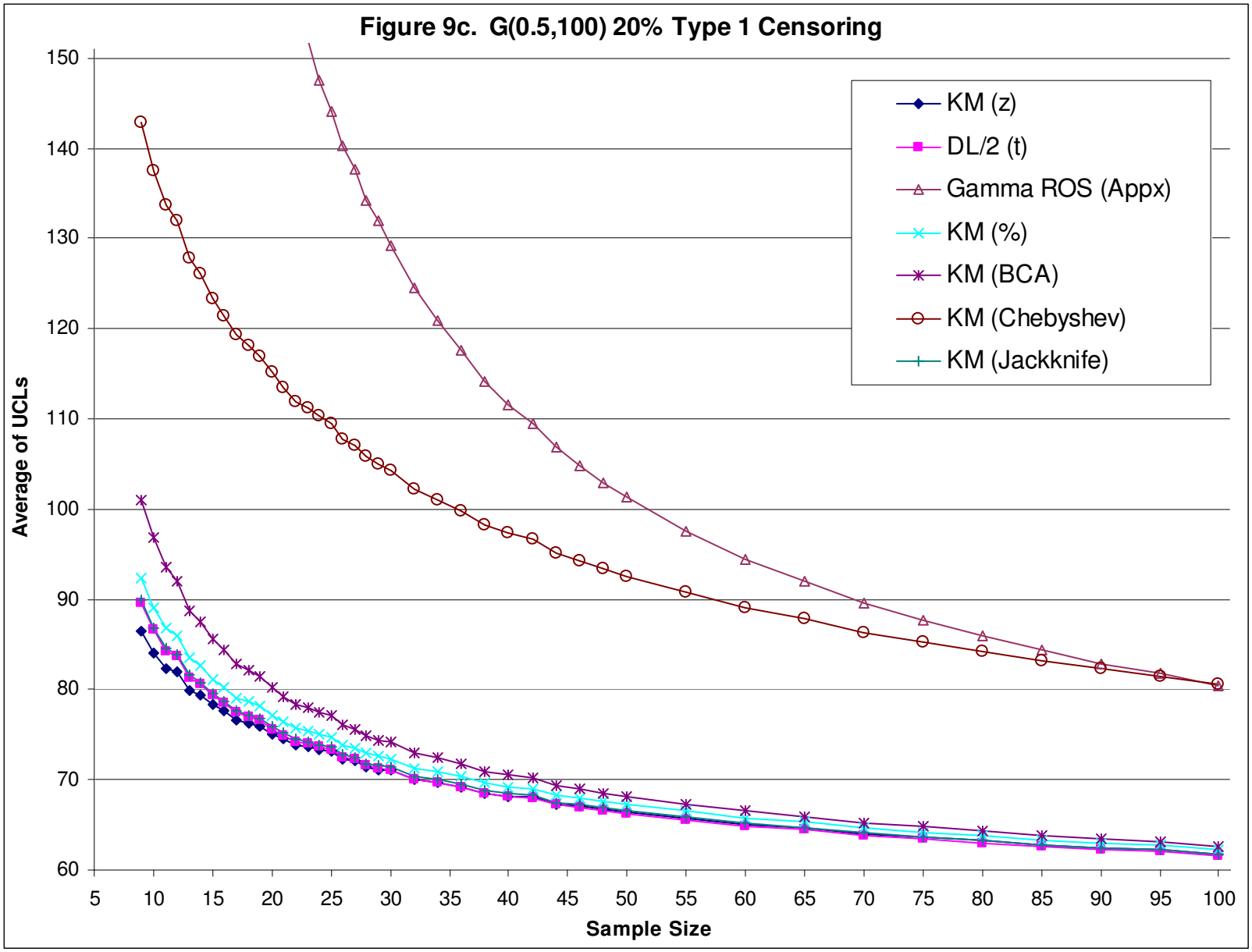
Figure 9c. G(0.5,100) 20% Type 1 Censoring
Average of UCLs
Sample Size
150
140
130
120
110
100
90
80
70
60
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

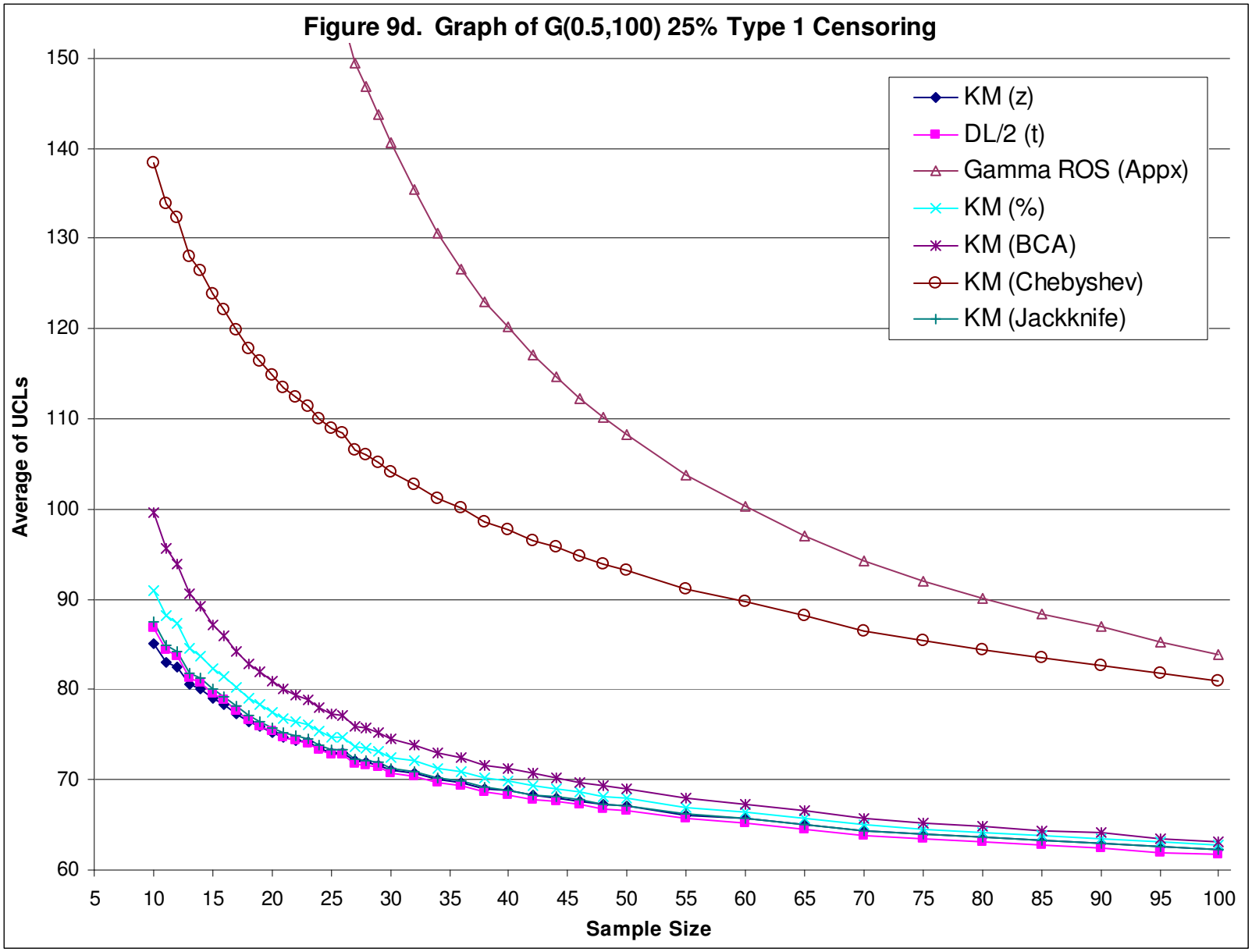
Figure 9d. Graph of G(0.5,100) 25% Type 1 Censoring
Average of UCLs
Sample Size
150
140
130
120
110
100
90
80
70
60
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

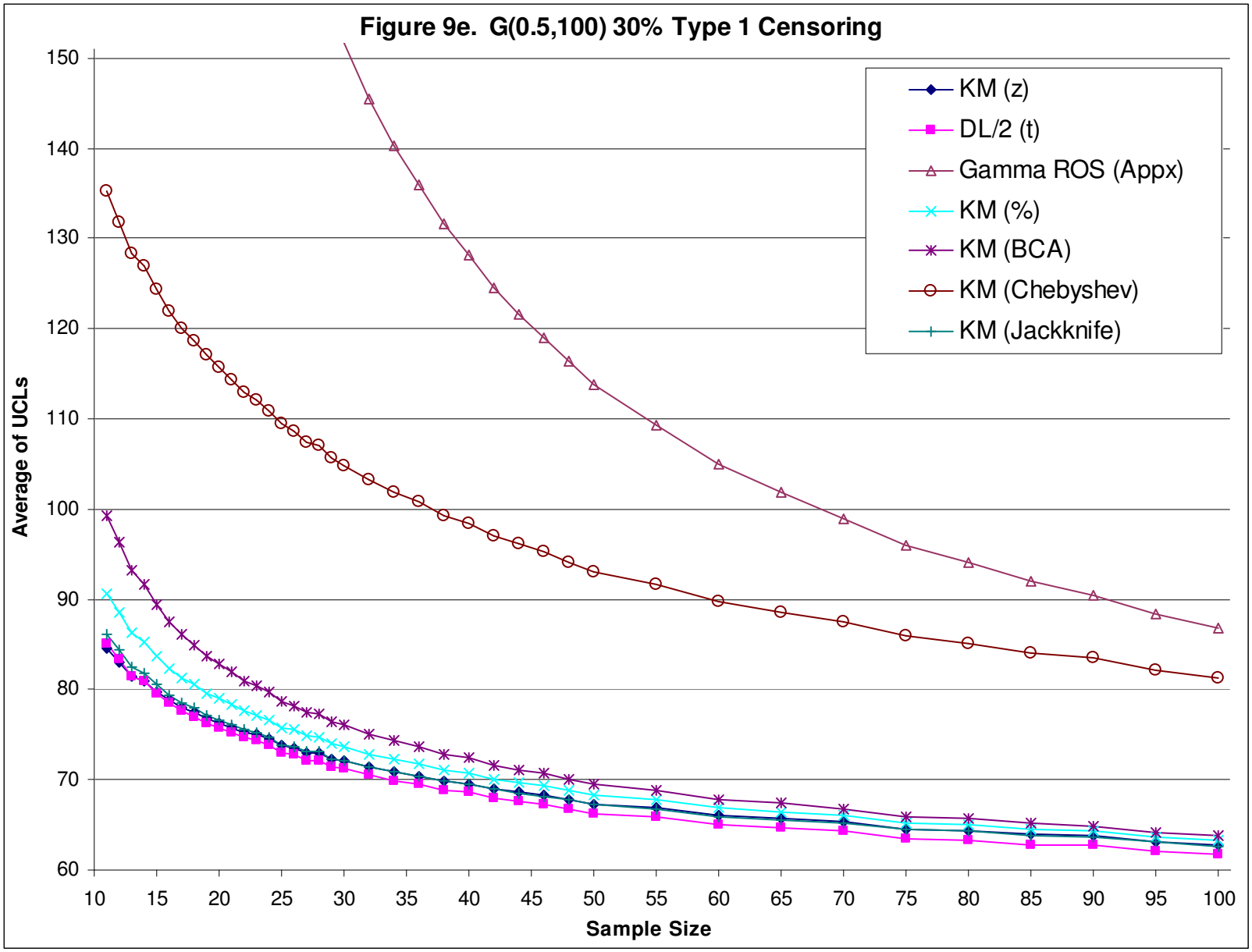
Figure 9e. G(0.5,100) 30% Type 1 Censoring
Average of UCLs
Sample Size
150
140
130
120
110
100
90
80
70
60
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

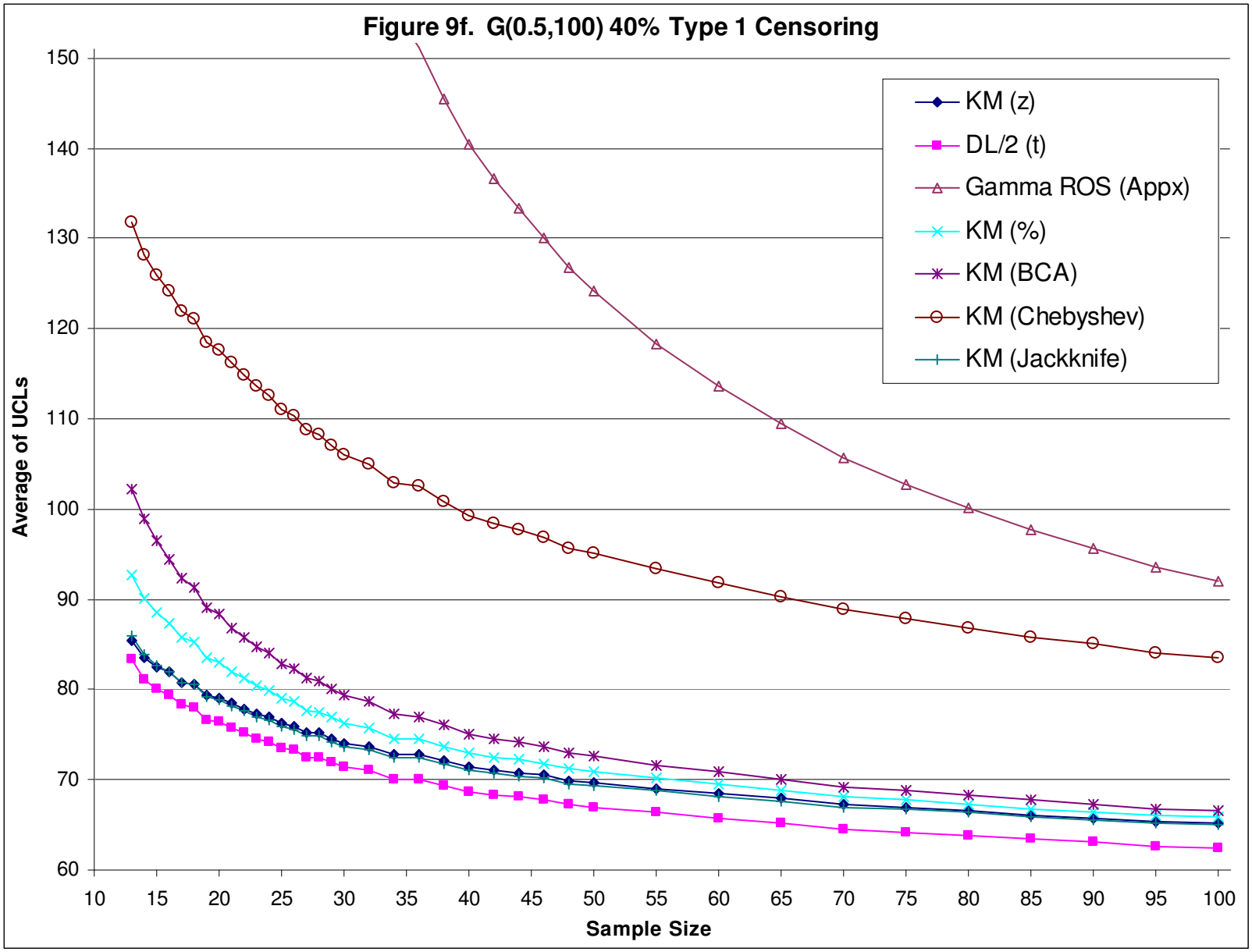
Figure 9f. G(0.5,100) 40% Type 1 Censoring
Average of UCLs
Sample Size
150
140
130
120
110
100
90
80
70
60
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

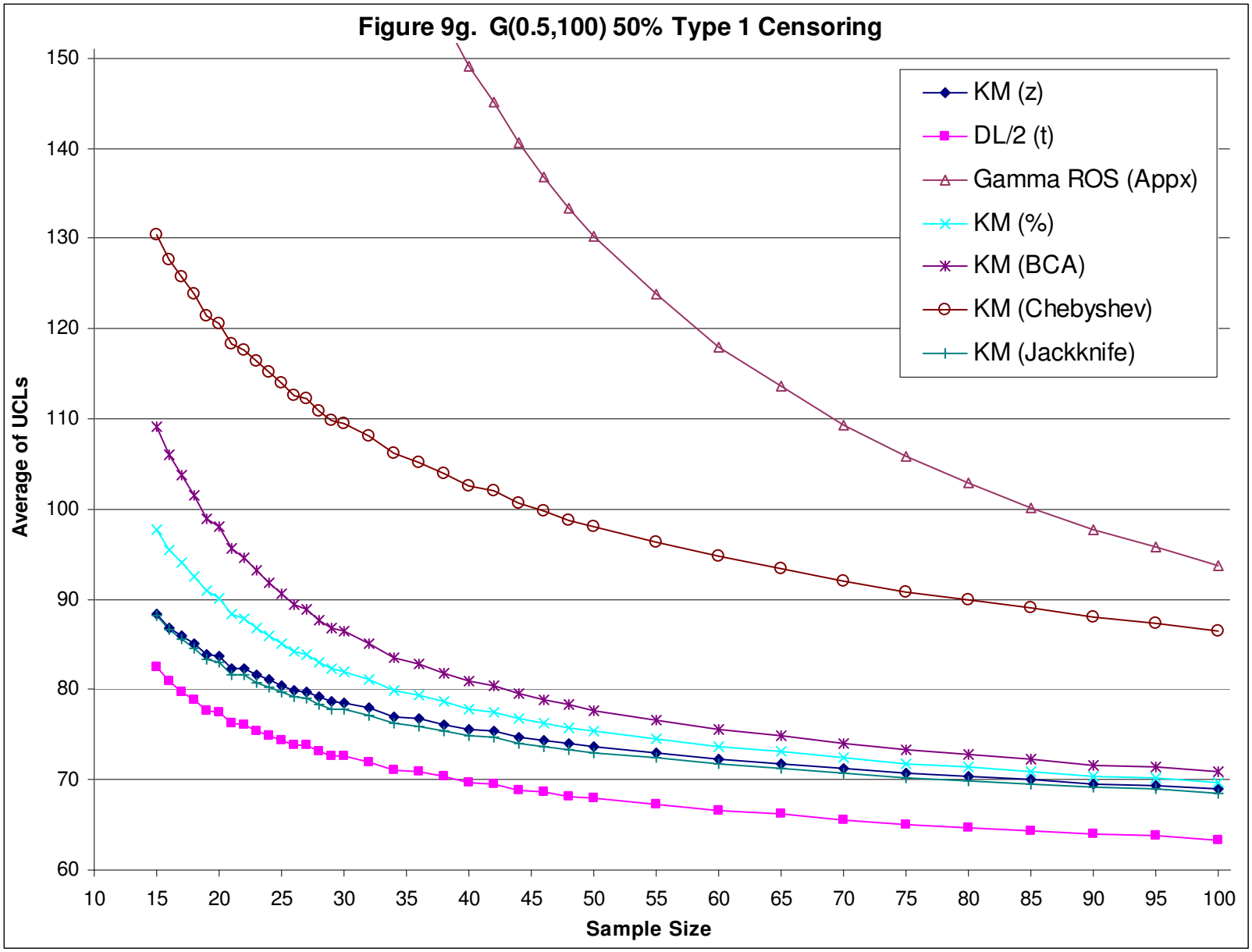
Figure 9g. G(0.5,100) 50% Type 1 Censoring
Average of UCLs
Sample Size
150
140
130
120
110
100
90
80
70
60
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

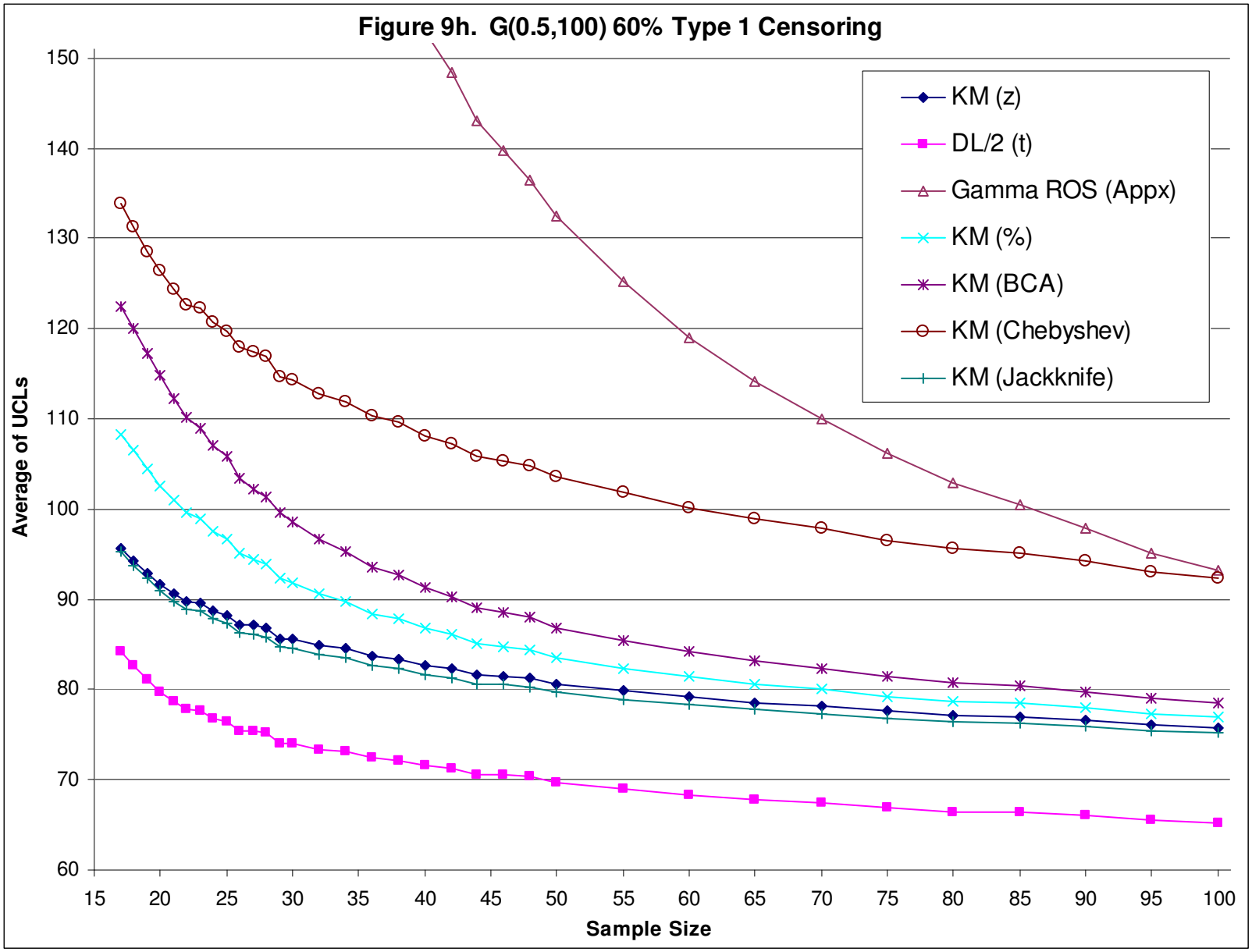
Figure 9h. G(0.5,100) 60% Type 1 Censoring
Average of UCLs
Sample Size
150
140
130
120
110
100
90
80
70
60
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

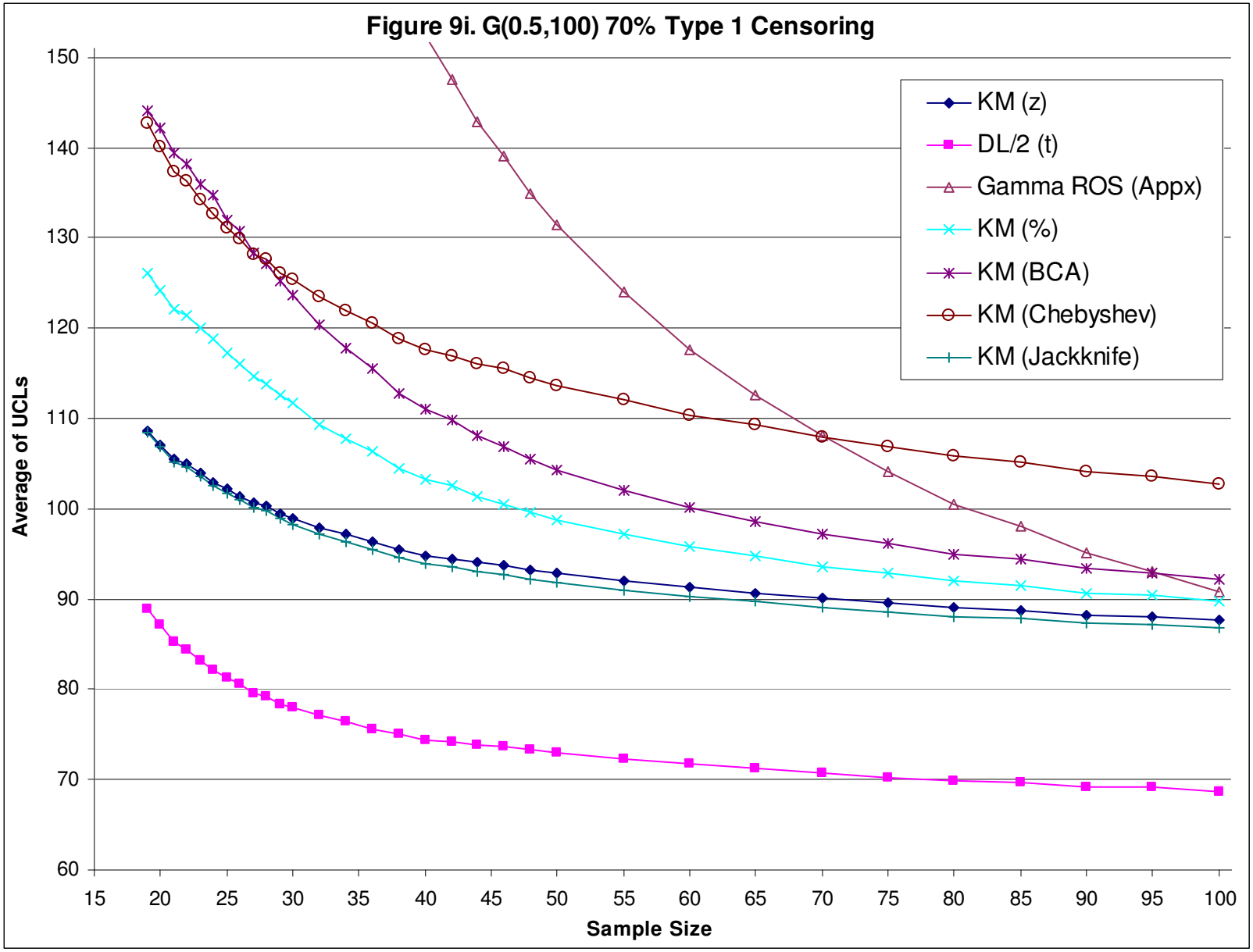
Figure 9i. G(0.5,100) 70% Type 1 Censoring
Average of UCLs
Sample Size
150
140
130
120
110
100
90
80
70
60
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

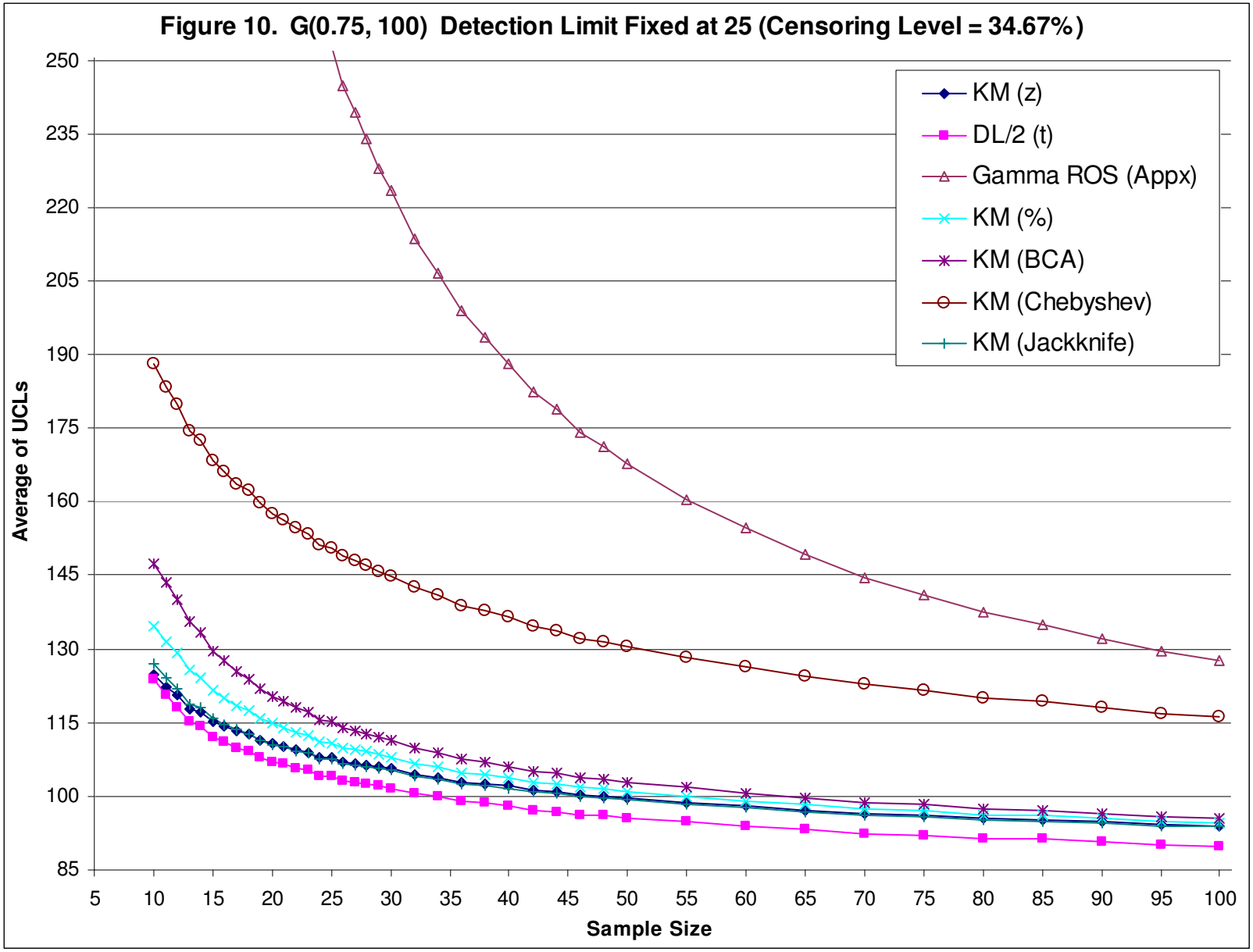
Figure 10. G(0.75, 100) Detection Limit Fixed at 25 (Censoring Level = 34.67%)
Average of UCLs
Sample Size
250
235
220
205
190
175
160
145
130
115
100
85
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

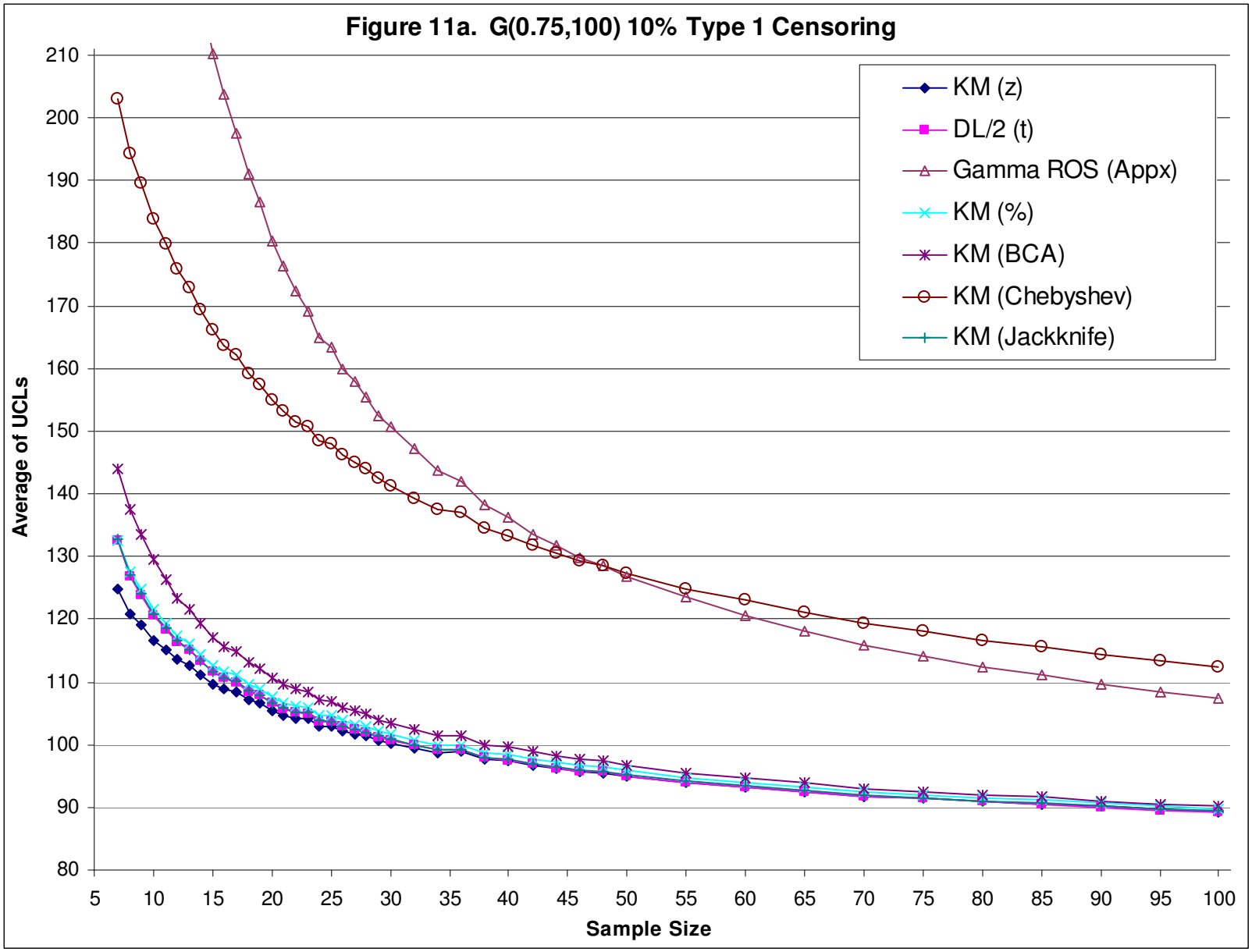
Figure 11a. G(0.75,100) 10% Type 1 Censoring
Average of UCLs
Sample Size
210
200
190
180
170
160
150
140
130
120
110
100
90
80
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

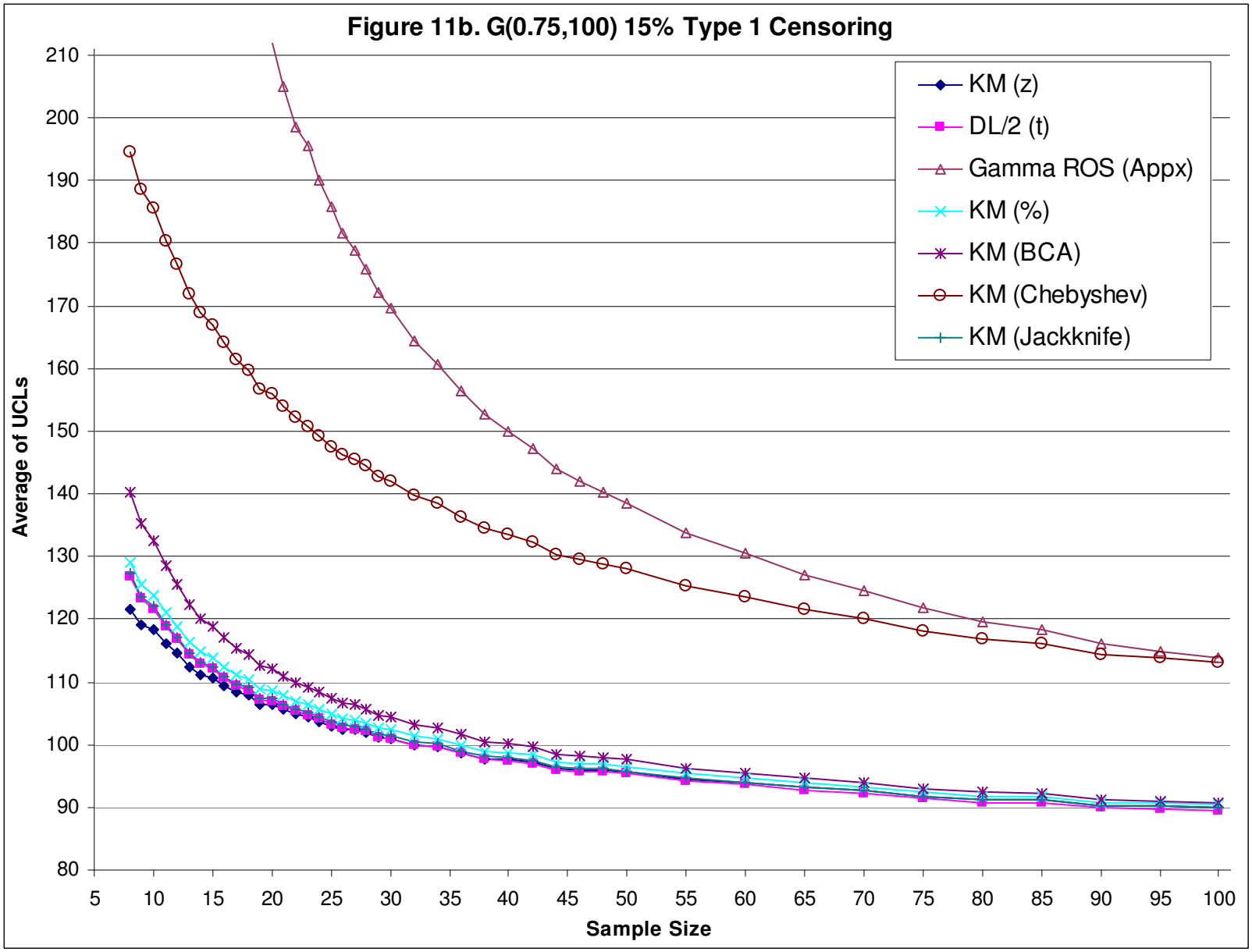
Figure 11b. G(0.75,100) 15% Type 1 Censoring
Average of UCLs
Sample Size
210
200
190
180
170
160
150
140
130
120
110
100
90
80
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

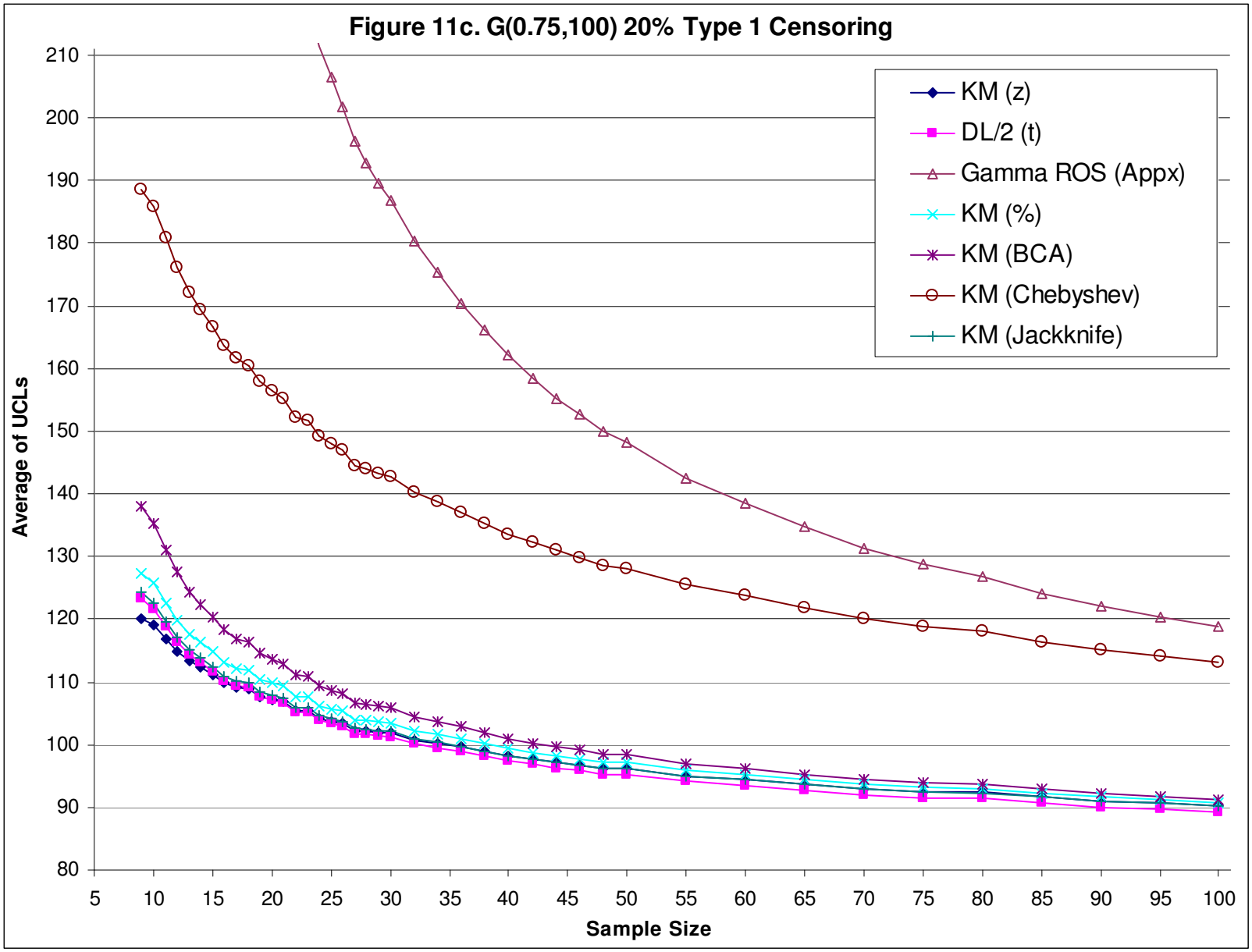
Figure 11c. G(0.75,100) 20% Type 1 Censoring
Average of UCLs
Sample Size
210
200
190
180
170
160
150
140
130
120
110
100
90
80
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

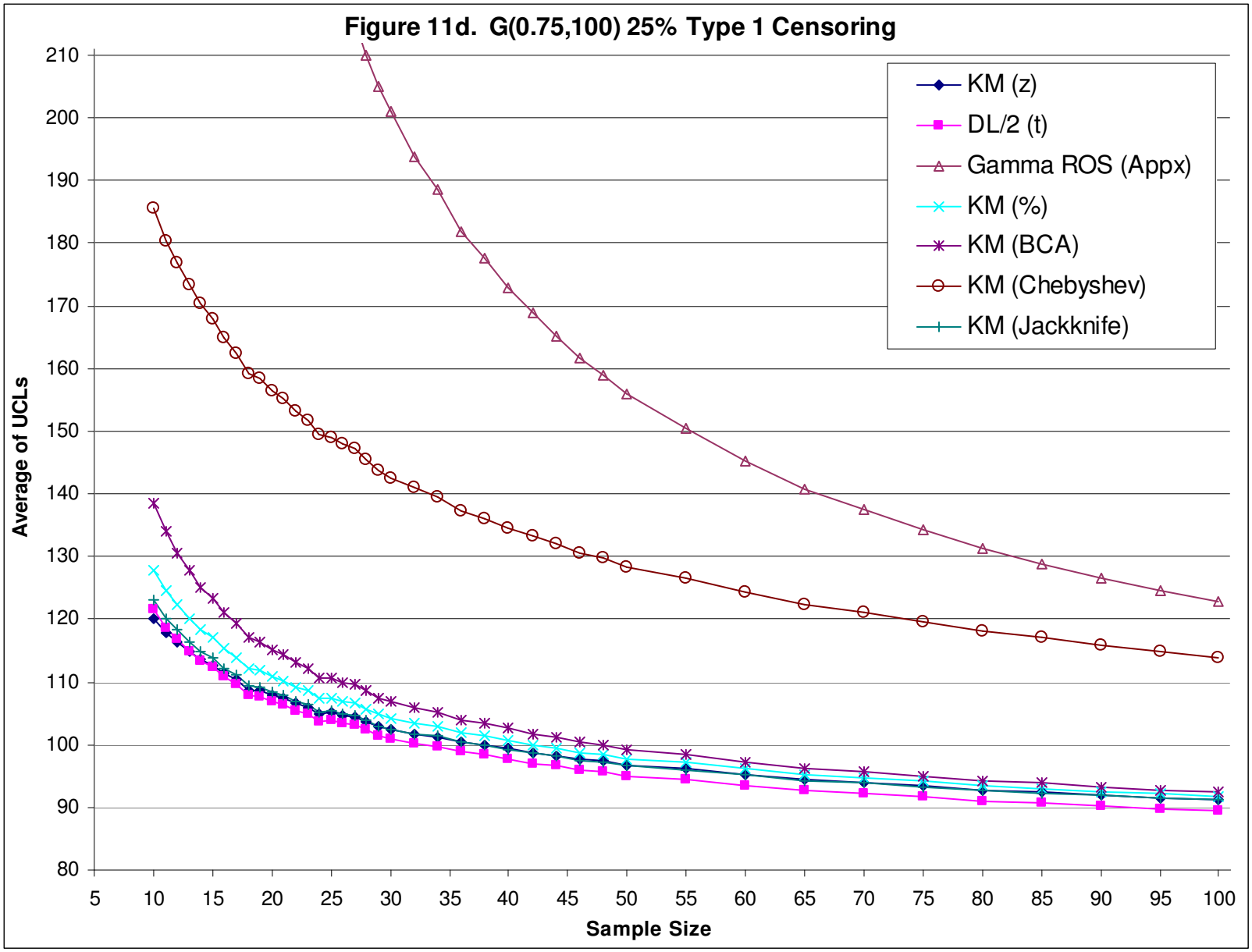
Figure 11d. G(0.75,100) 25% Type 1 Censoring
Average of UCLs
Sample Size
210
200
190
180
170
160
150
140
130
120
110
100
90
80
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

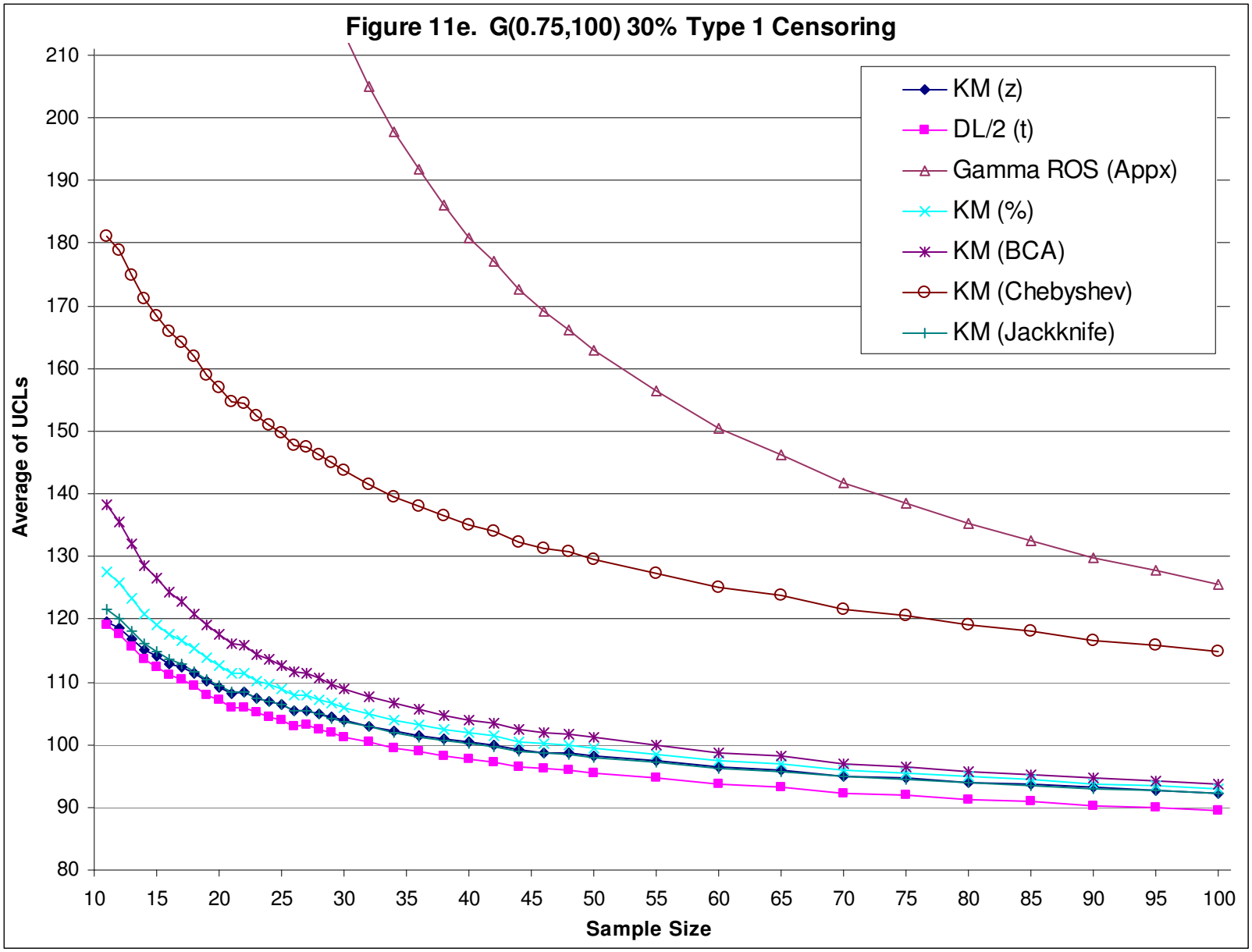
Figure 11e. G(0.75,100) 30% Type 1 Censoring
Average of UCLs
Sample Size
210
200
190
180
170
160
150
140
130
120
110
100
90
80
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

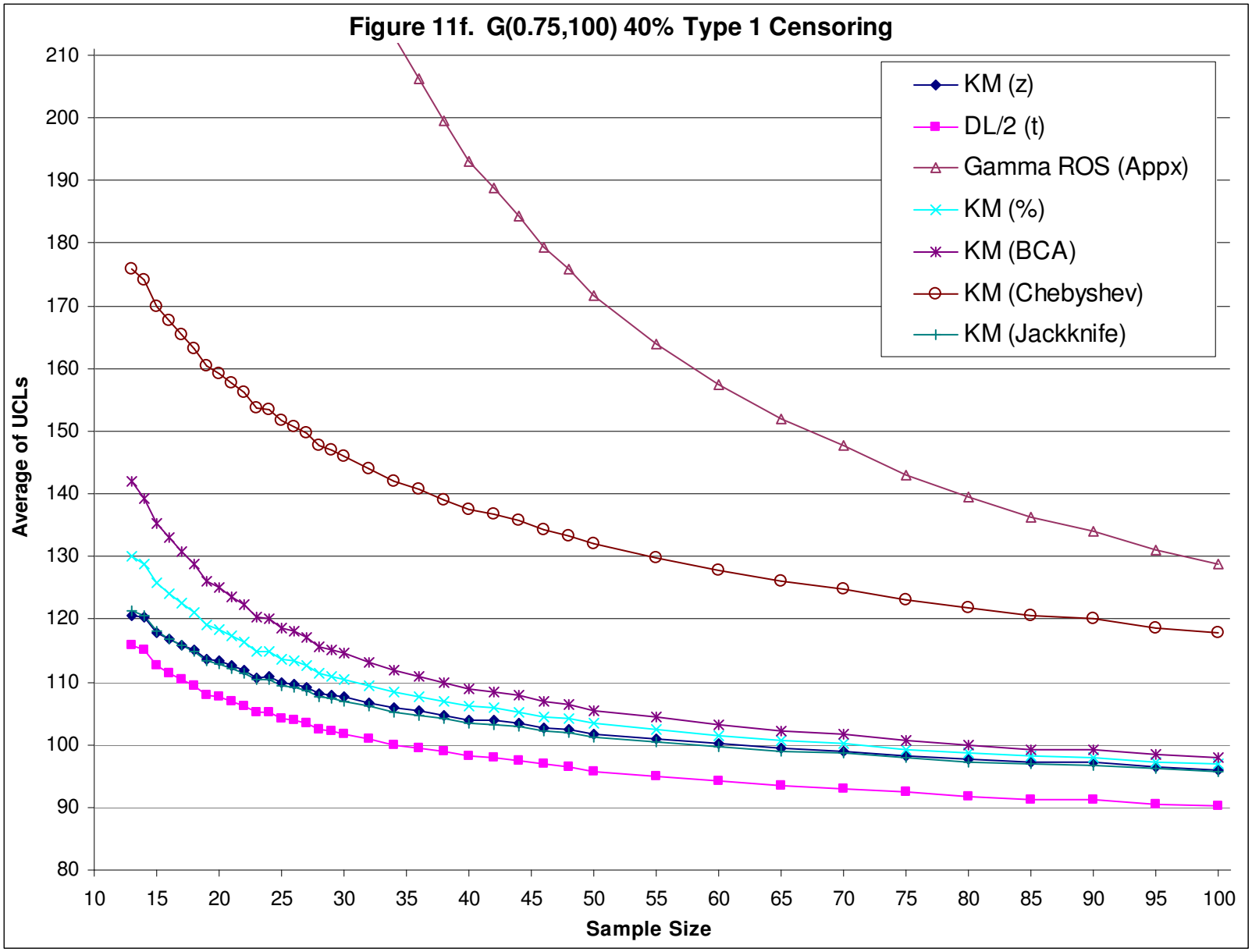
Figure 11f. G(0.75,100) 40% Type 1 Censoring
Average of UCLs
Sample Size
210
200
190
180
170
160
150
140
130
120
110
100
90
80
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

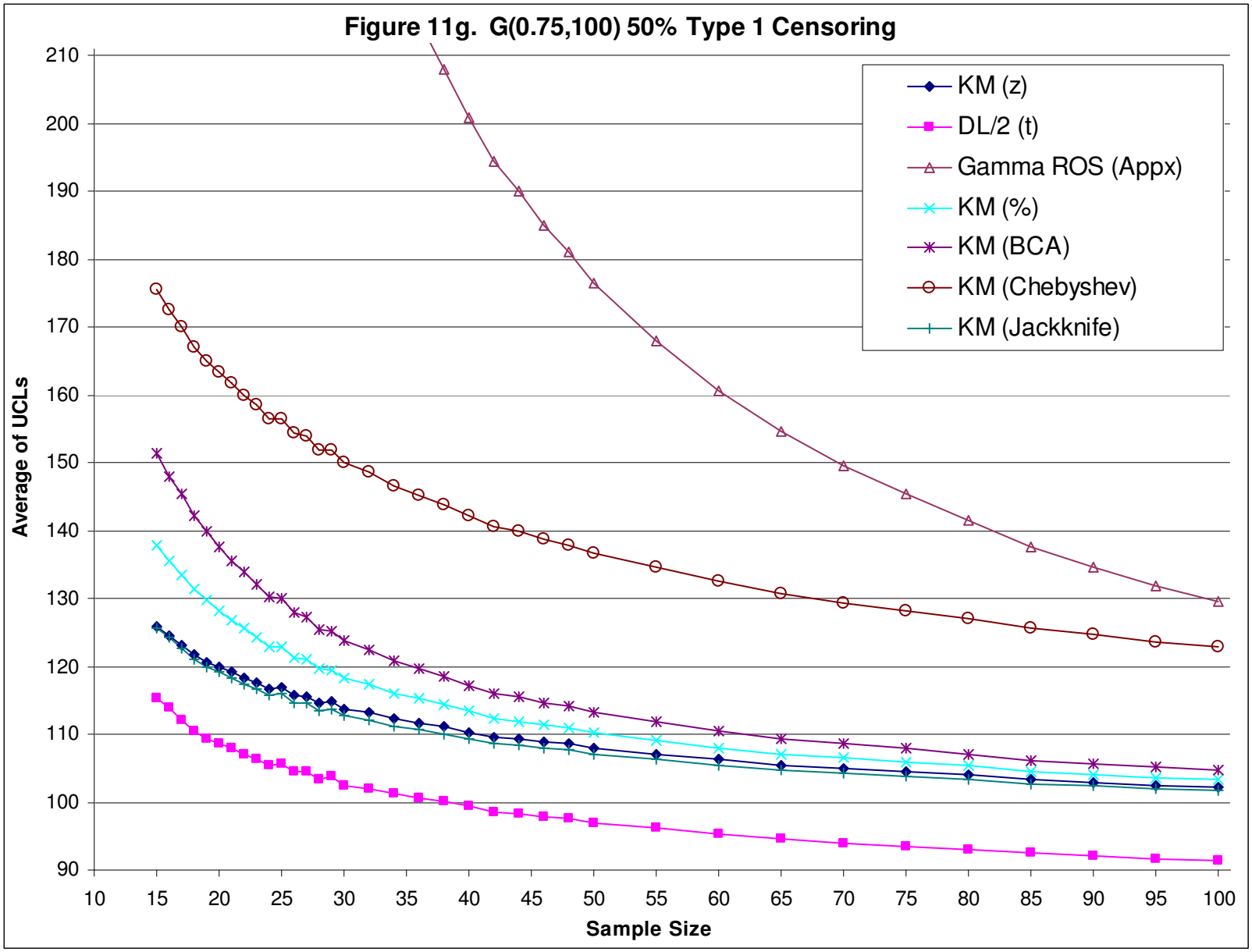
Figure 11g. G(0.75,100) 50% Type 1 Censoring
Average of UCLs
Sample Size
210
200
190
180
170
160
150
140
130
120
110
100
90
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

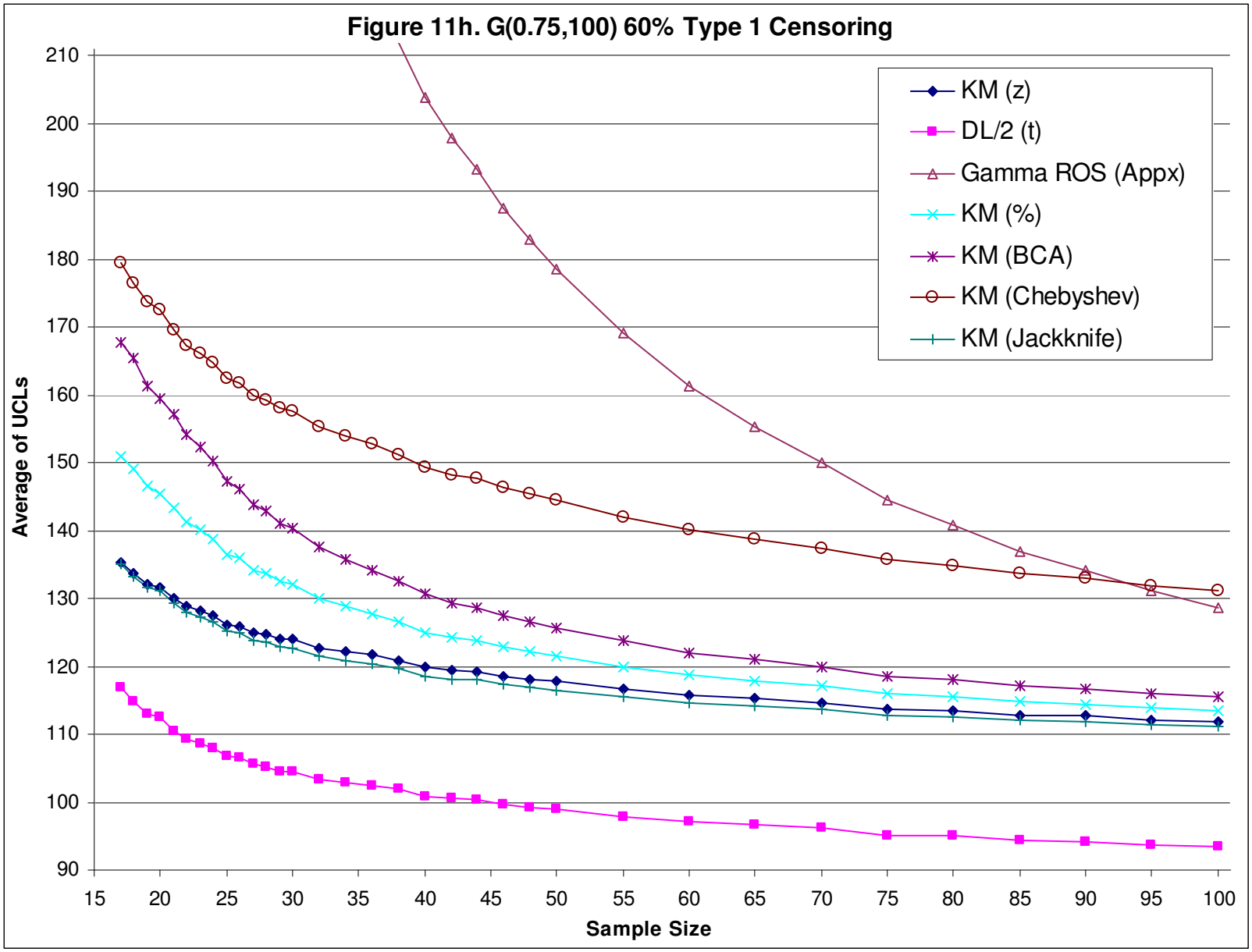
Figure 11h. G(0.75,100) 60% Type 1 Censoring
Average of UCLs
Sample Size
210
200
190
180
170
160
150
140
130
120
110
100
90
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

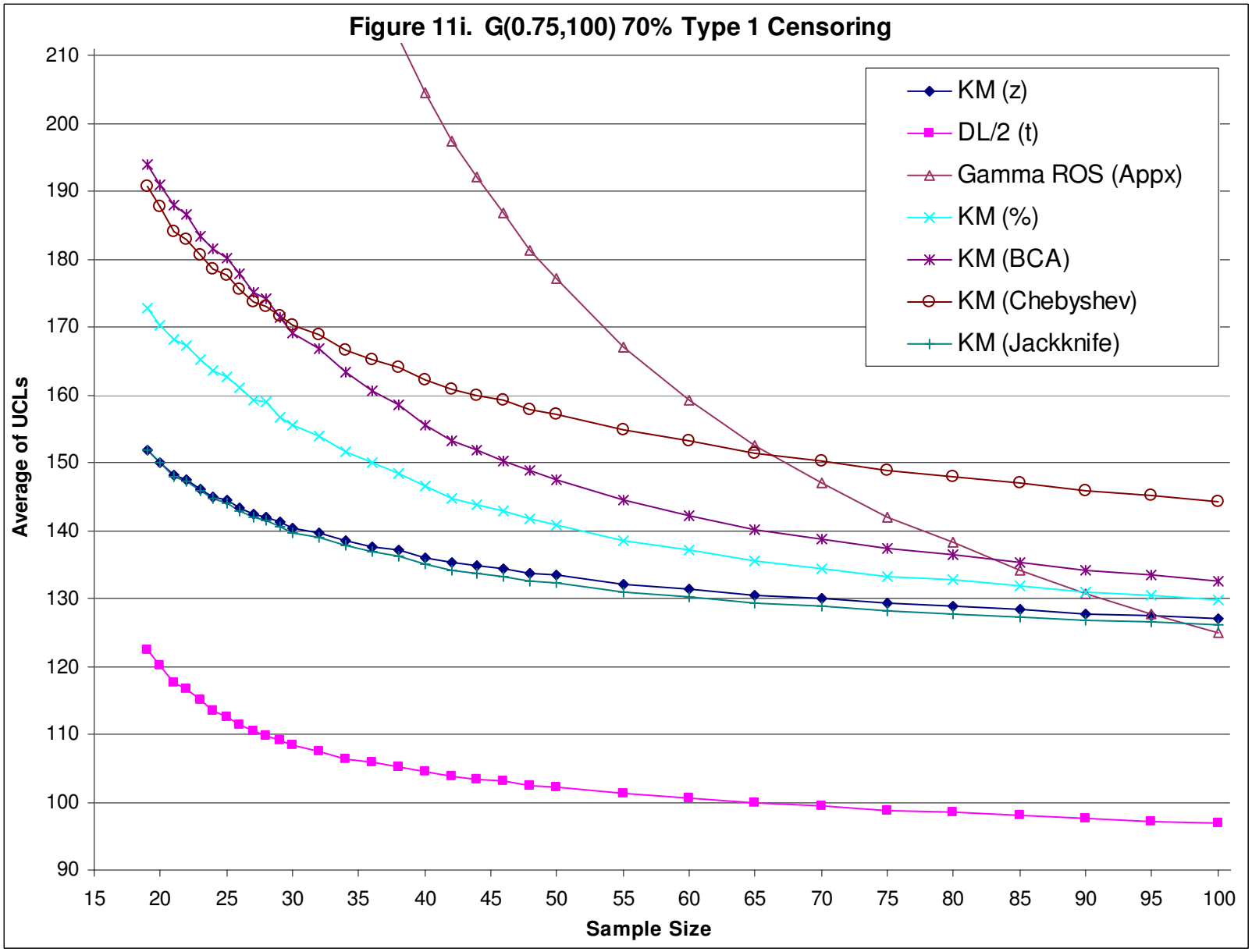
Figure 11i. G(0.75,100) 70% Type 1 Censoring
Average of UCLs
Sample Size
210
200
190
180
170
160
150
140
130
120
110
100
90
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

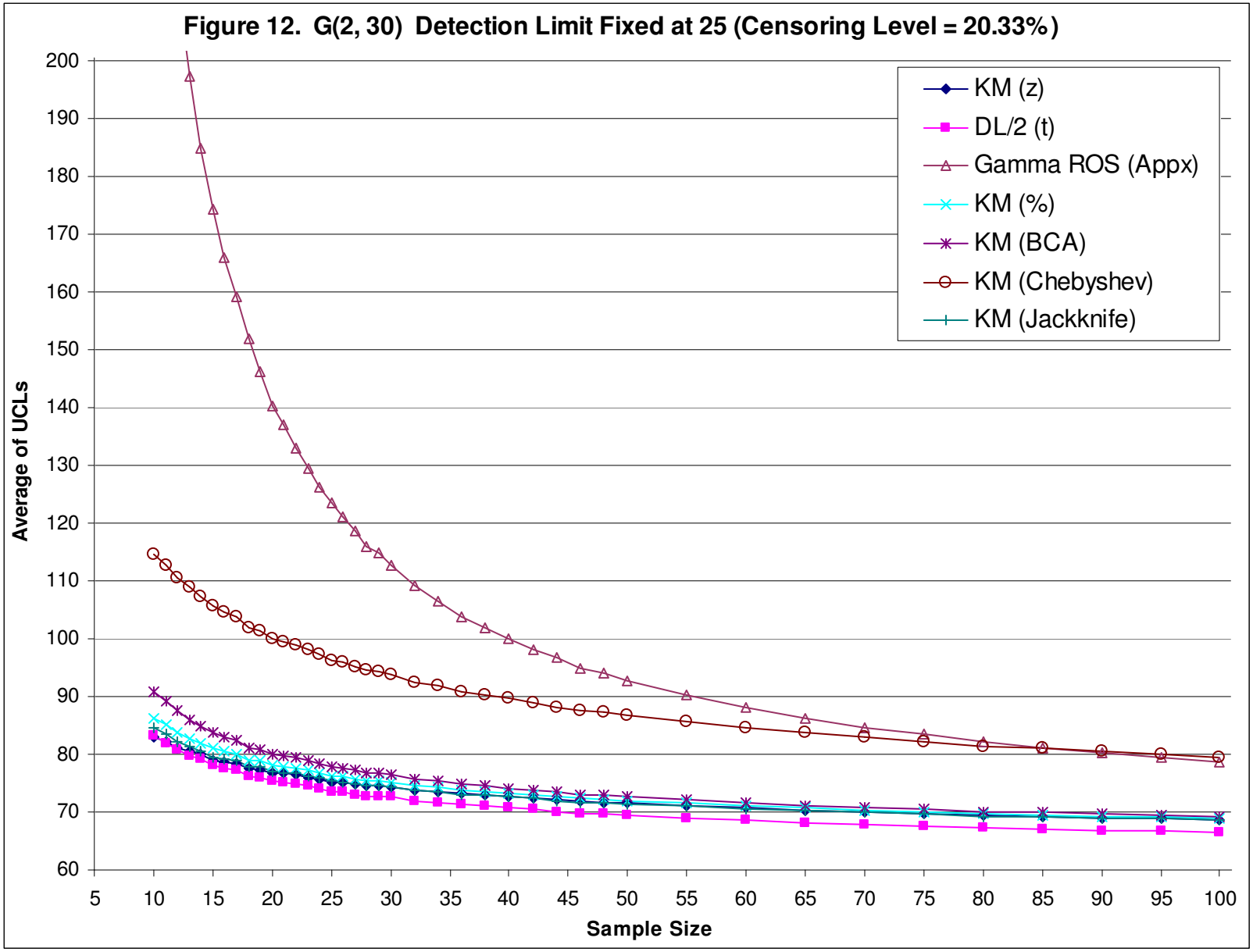
Figure 12. G(2, 30) Detection Limit Fixed at 25 (Censoring Level = 20.33%)
Average of UCLs
Sample Size
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

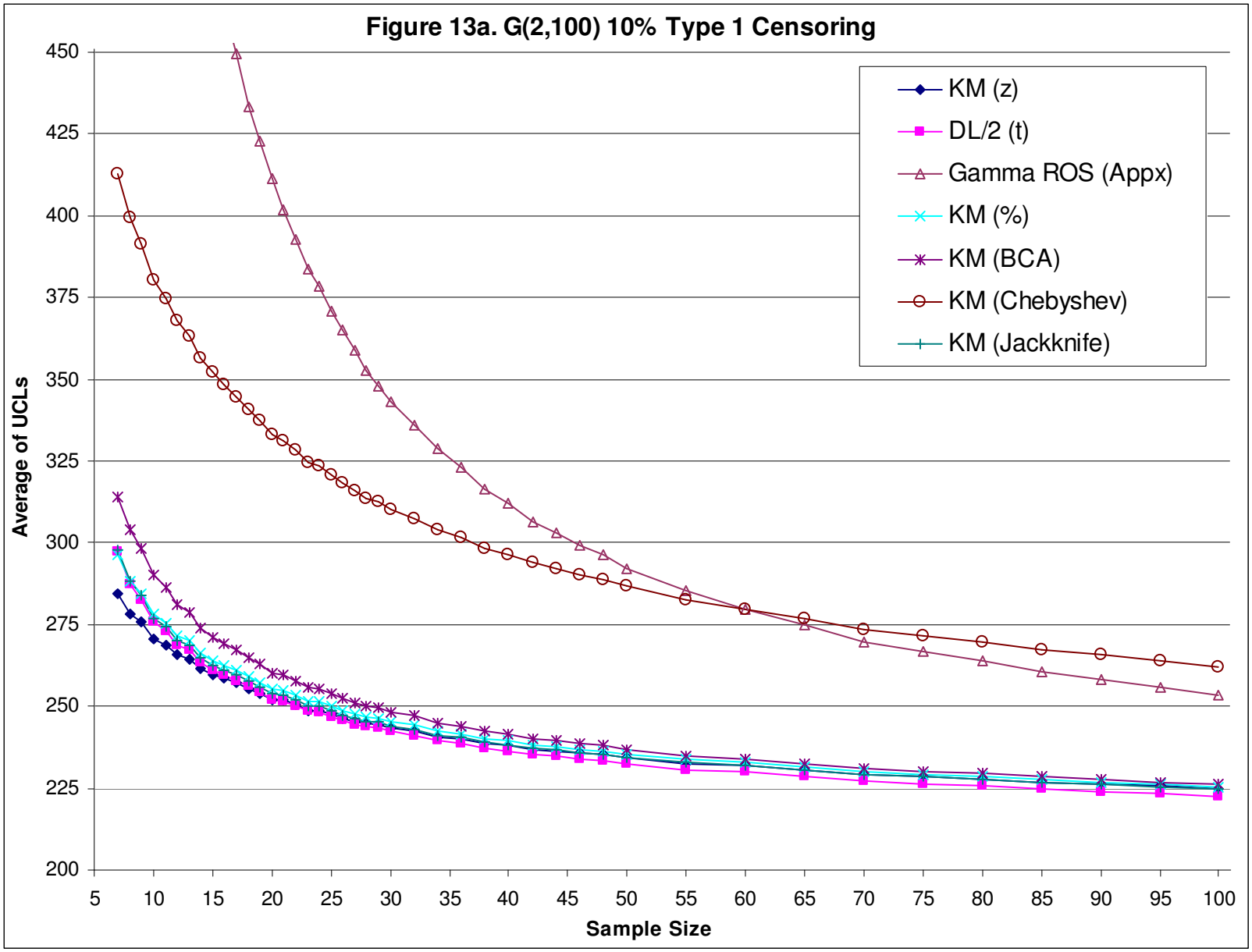
Figure 13a. G(2,100) 10% Type 1 Censoring
Average of UCLs
Sample Size
450
425
400
375
350
325
300
275
250
225
200
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

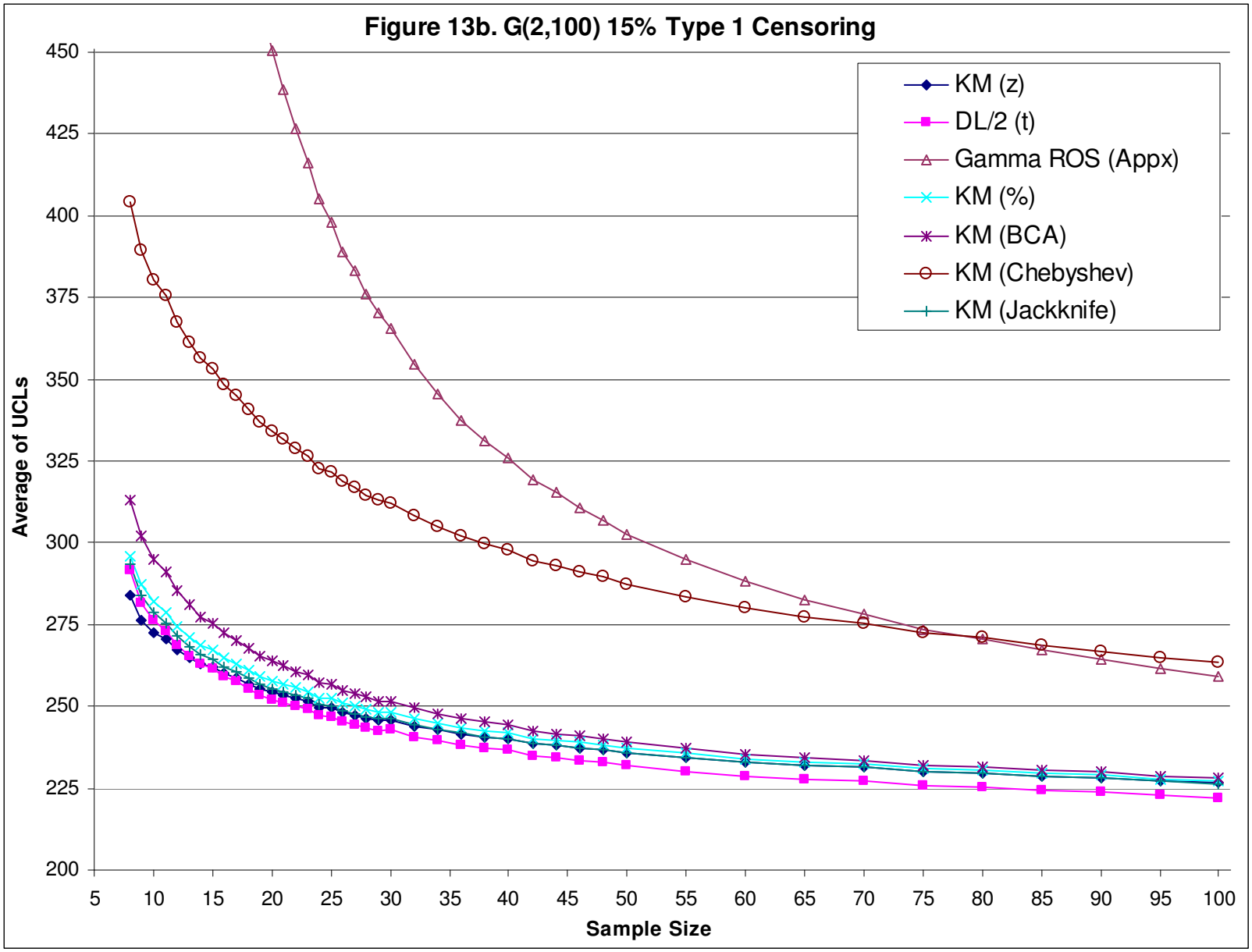
Figure 13b. G(2,100) 15% Type 1 Censoring
Average of UCLs
Sample Size
450
425
400
375
350
325
300
275
250
225
200
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

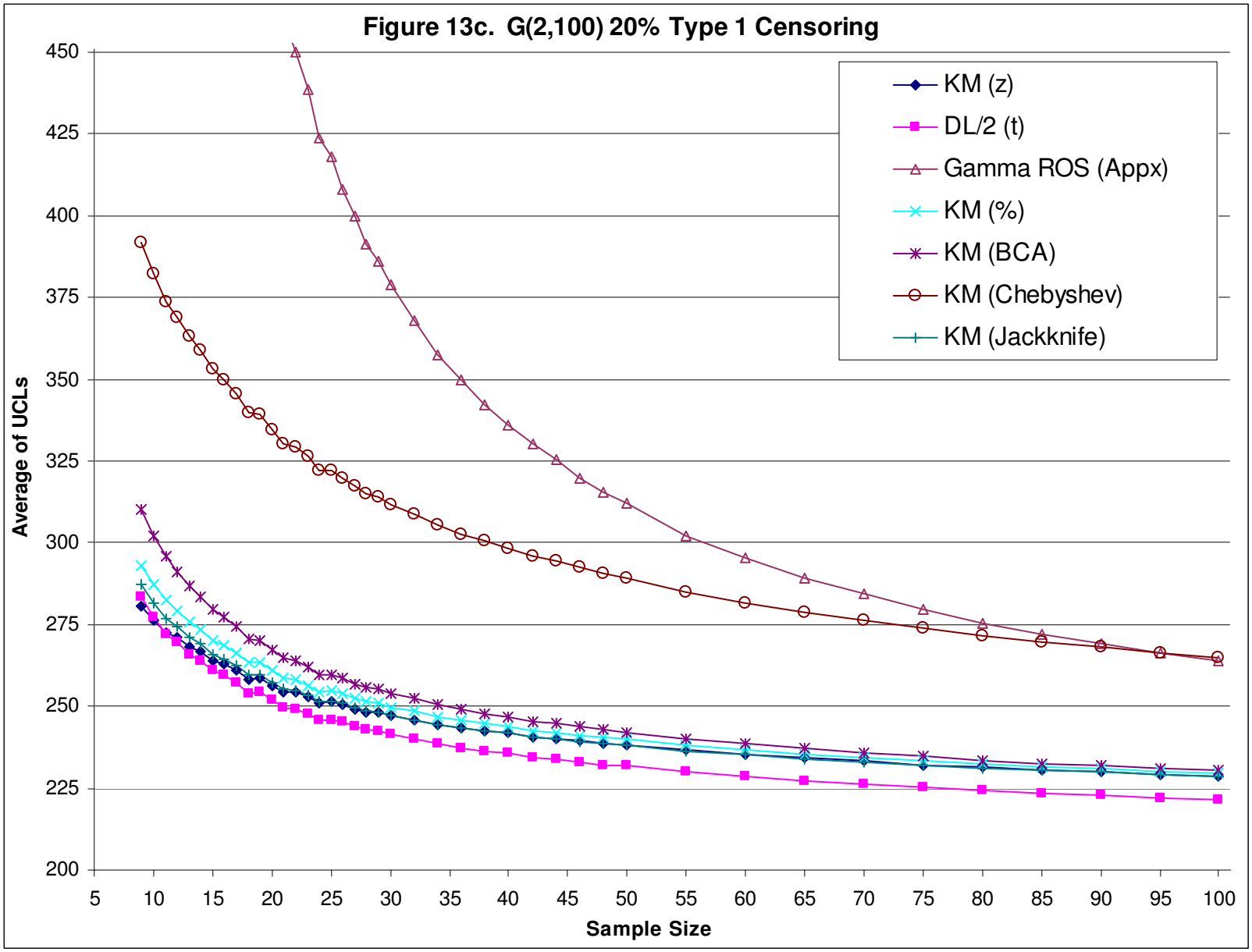
Figure 13c. G(2,100) 20% Type 1 Censoring
Average of UCLs
Sample Size
450
425
400
375
350
325
300
275
250
225
200
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

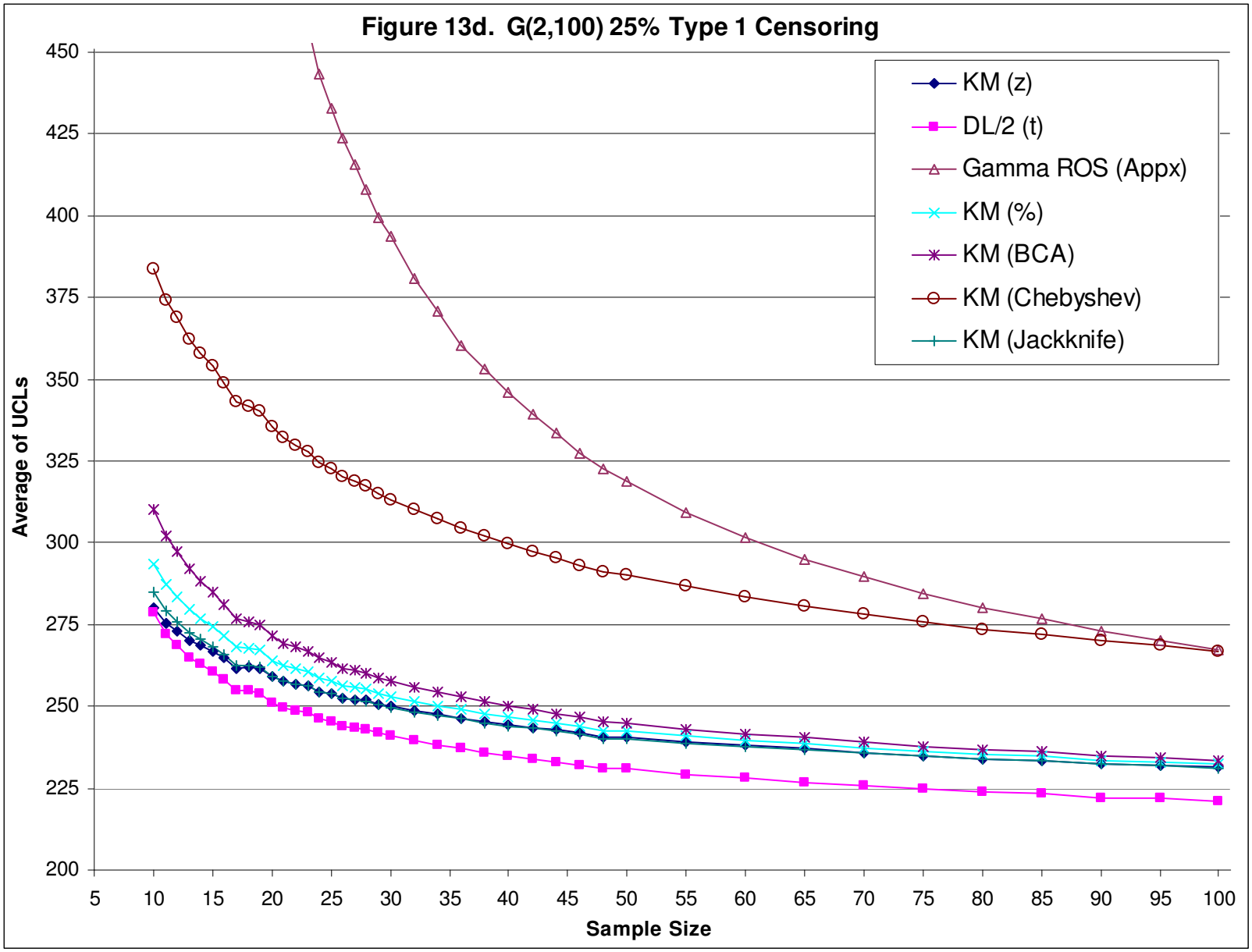
Figure 13d. G(2,100) 25% Type 1 Censoring
Average of UCLs
Sample Size
450
425
400
375
350
325
300
275
250
225
200
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

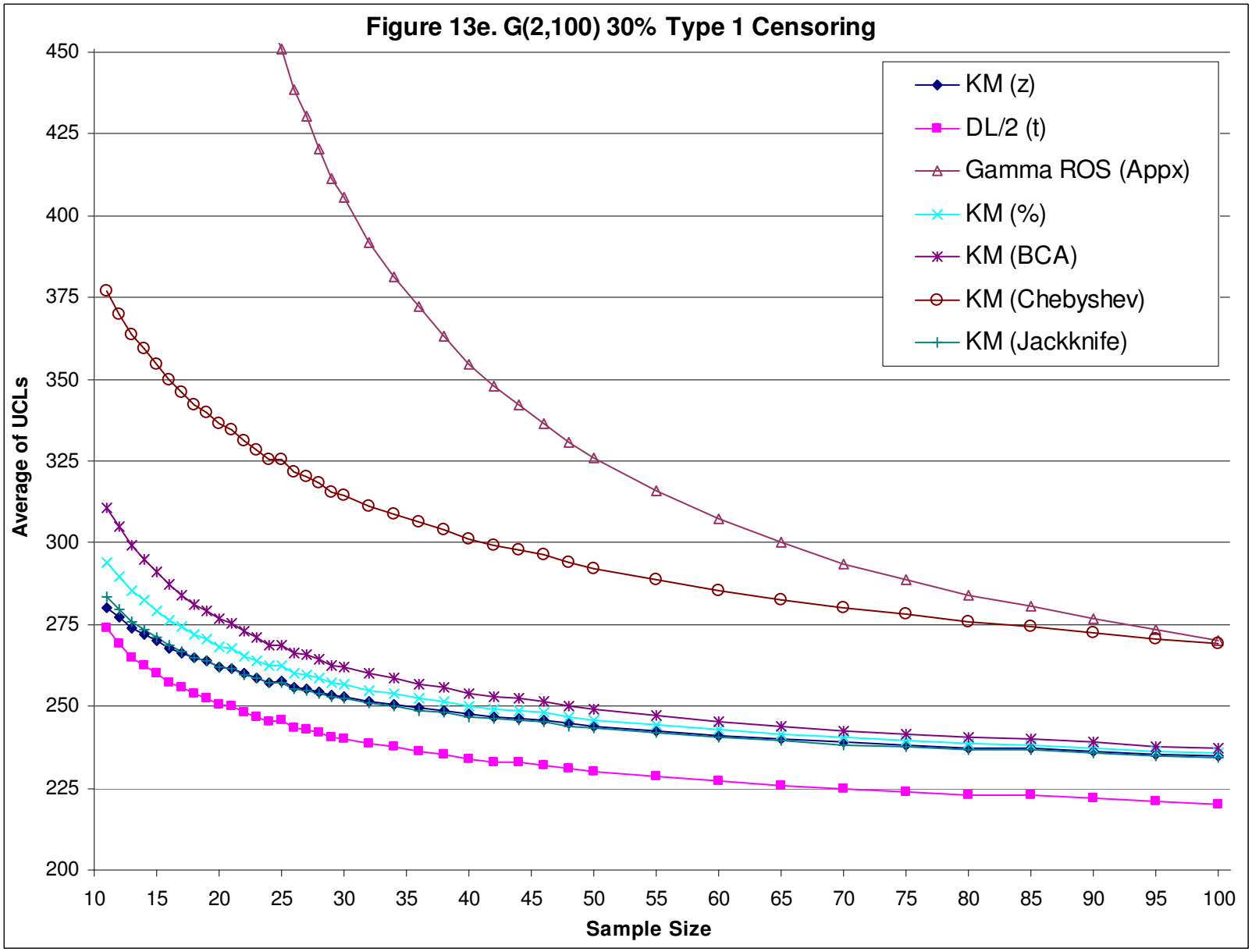
Figure 13e. G(2,100) 30% Type 1 Censoring
Average of UCLs
Sample Size
450
425
400
375
350
325
300
275
250
225
200
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

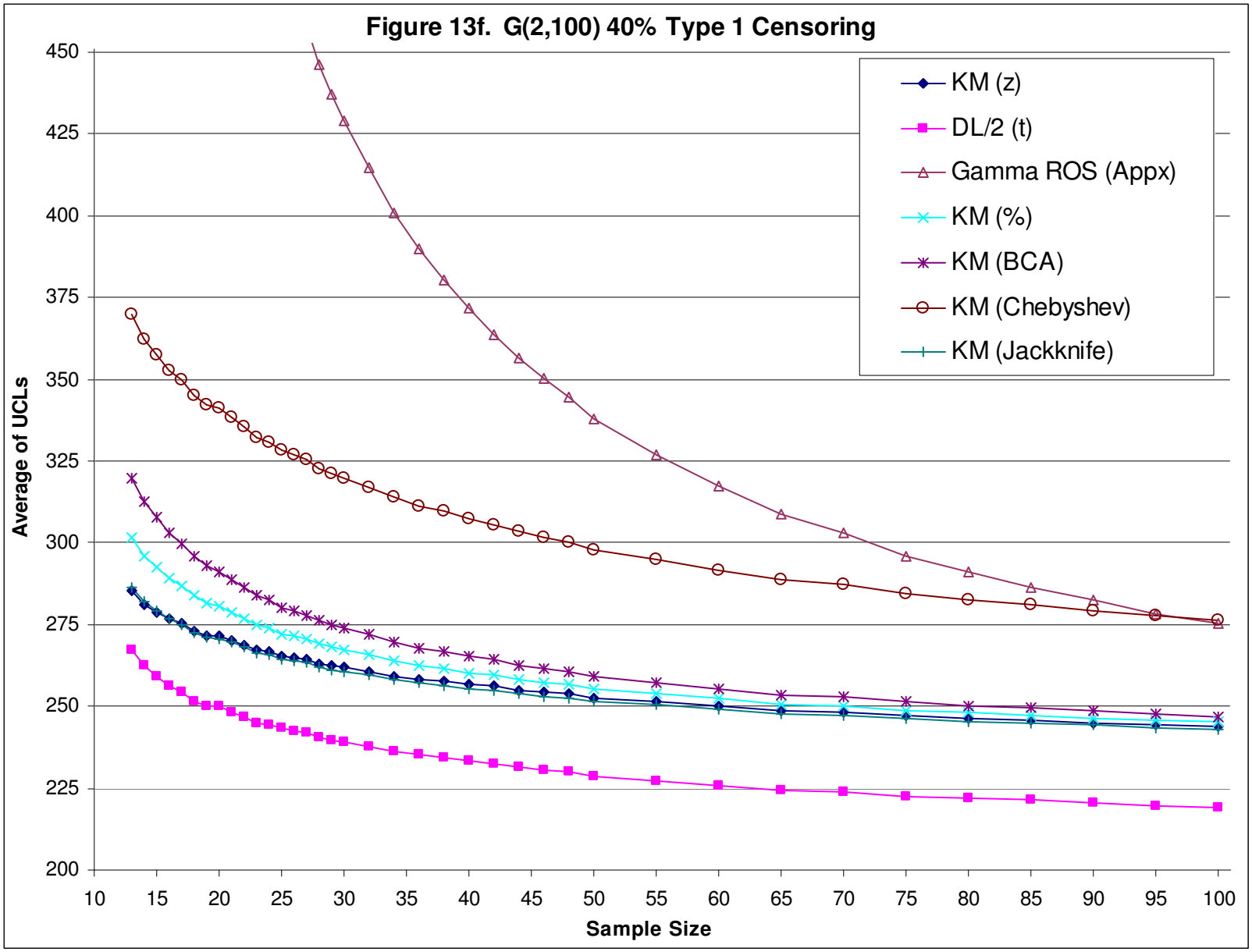
Figure 13f. G(2,100) 40% Type 1 Censoring
Average of UCLs
Sample Size
450
425
400
375
350
325
300
275
250
225
200
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

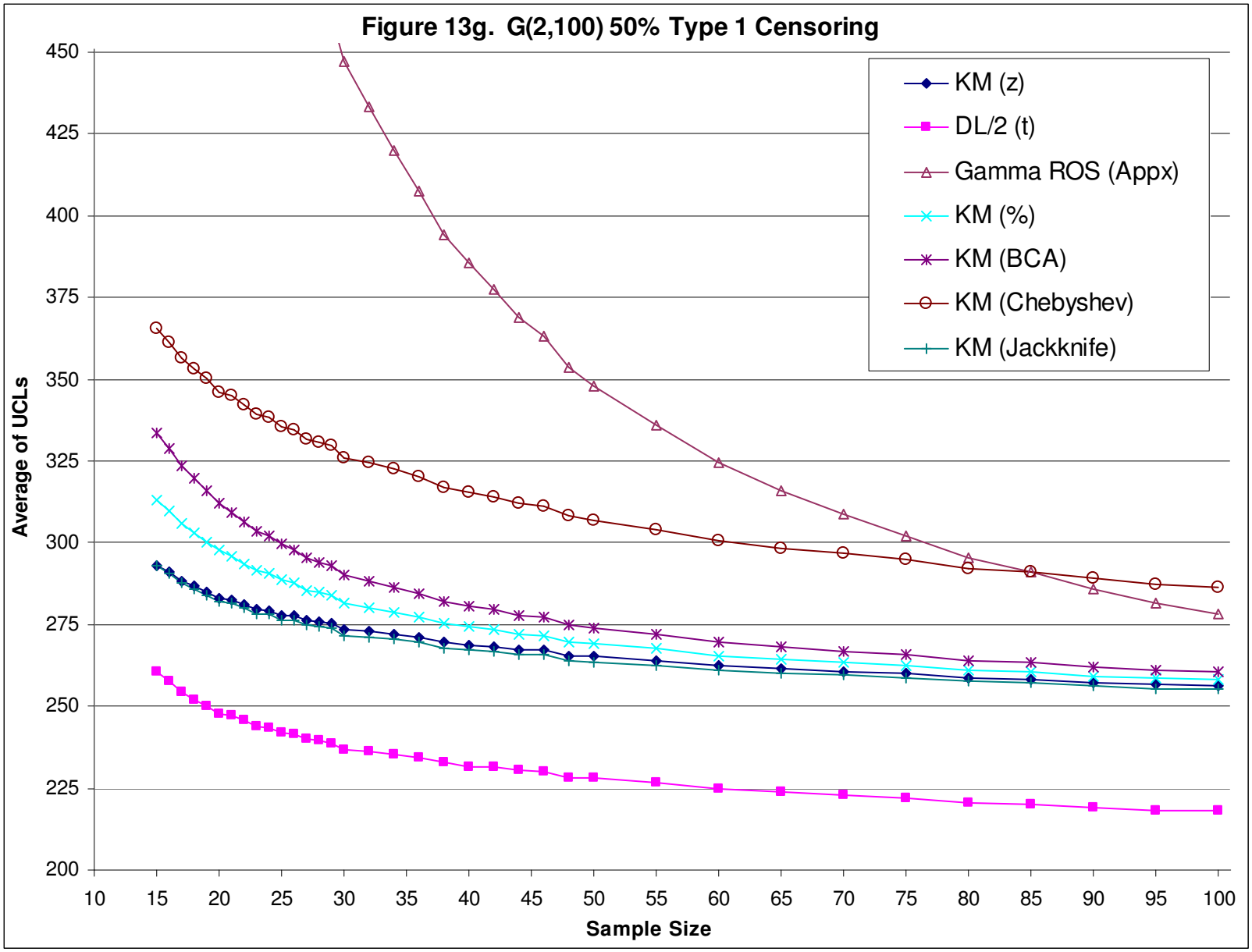
Figure 13g. G(2,100) 50% Type 1 Censoring
Average of UCLs
Sample Size
450
425
400
375
350
325
300
275
250
225
200
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

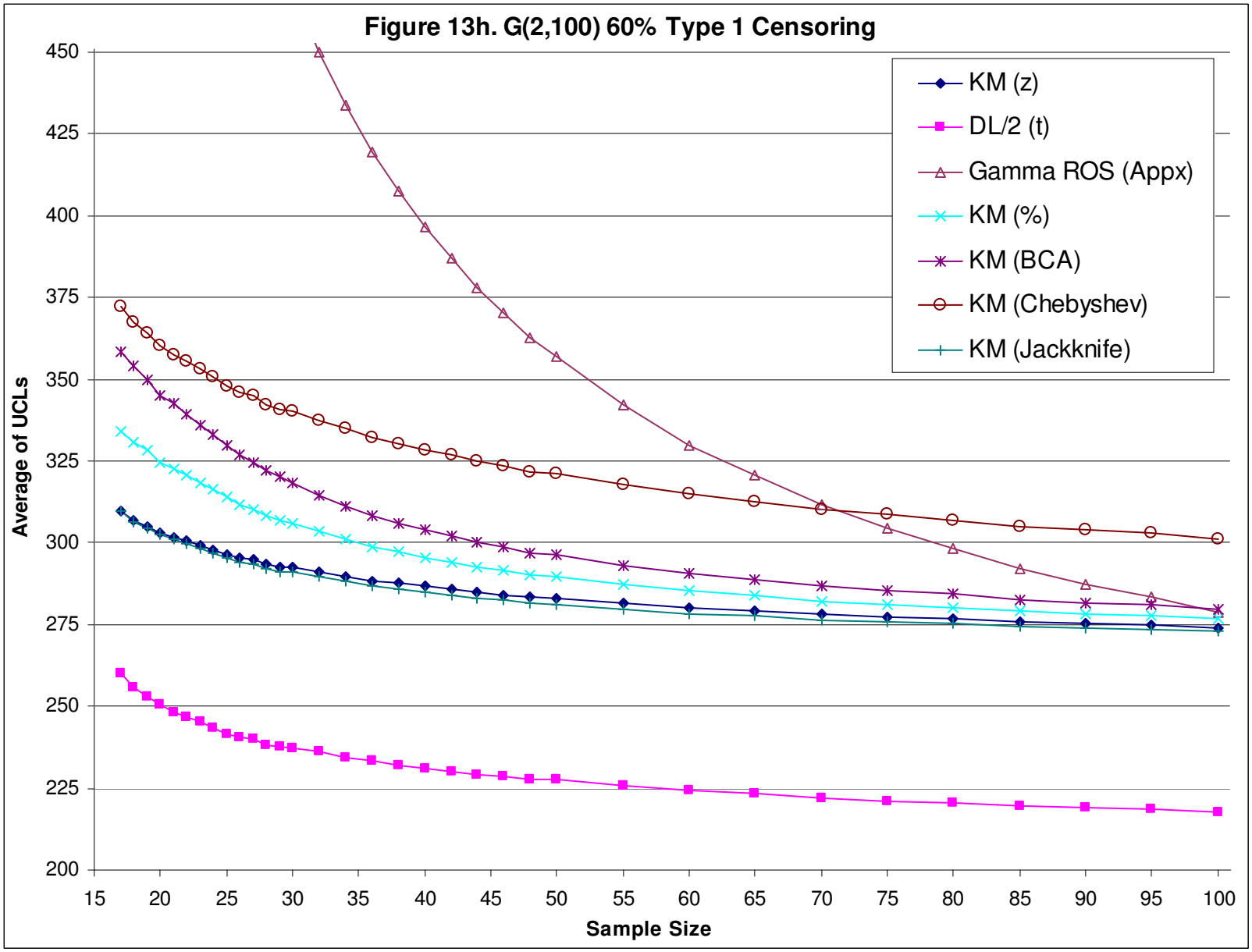
Figure 13h. G(2,100) 60% Type 1 Censoring
Average of UCLs
Sample Size
450
425
400
375
350
325
300
275
250
225
200
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

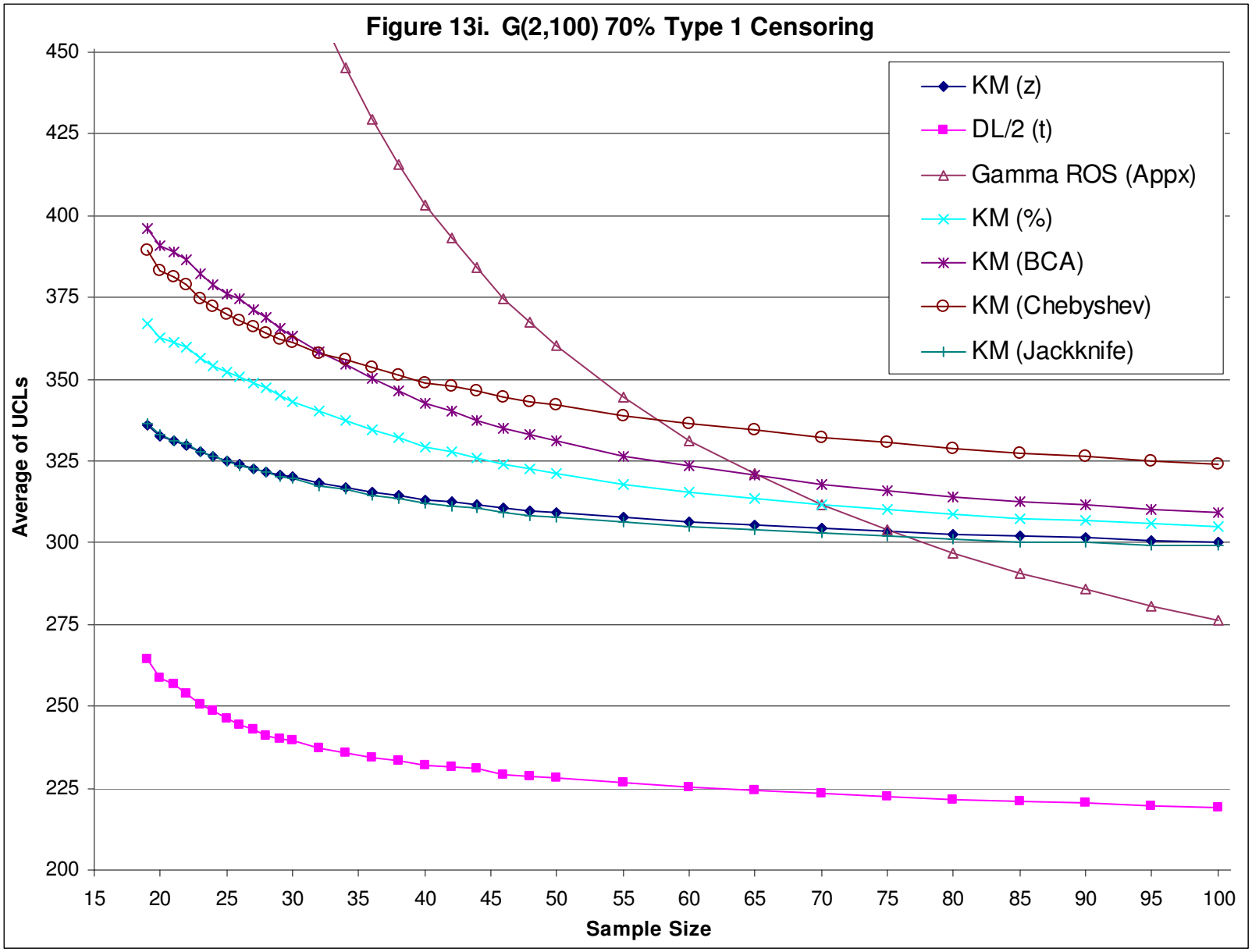
Figure 13i. G(2,100) 70% Type 1 Censoring
Average of UCLs
Sample Size
450
425
400
375
350
325
300
275
250
225
200
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)

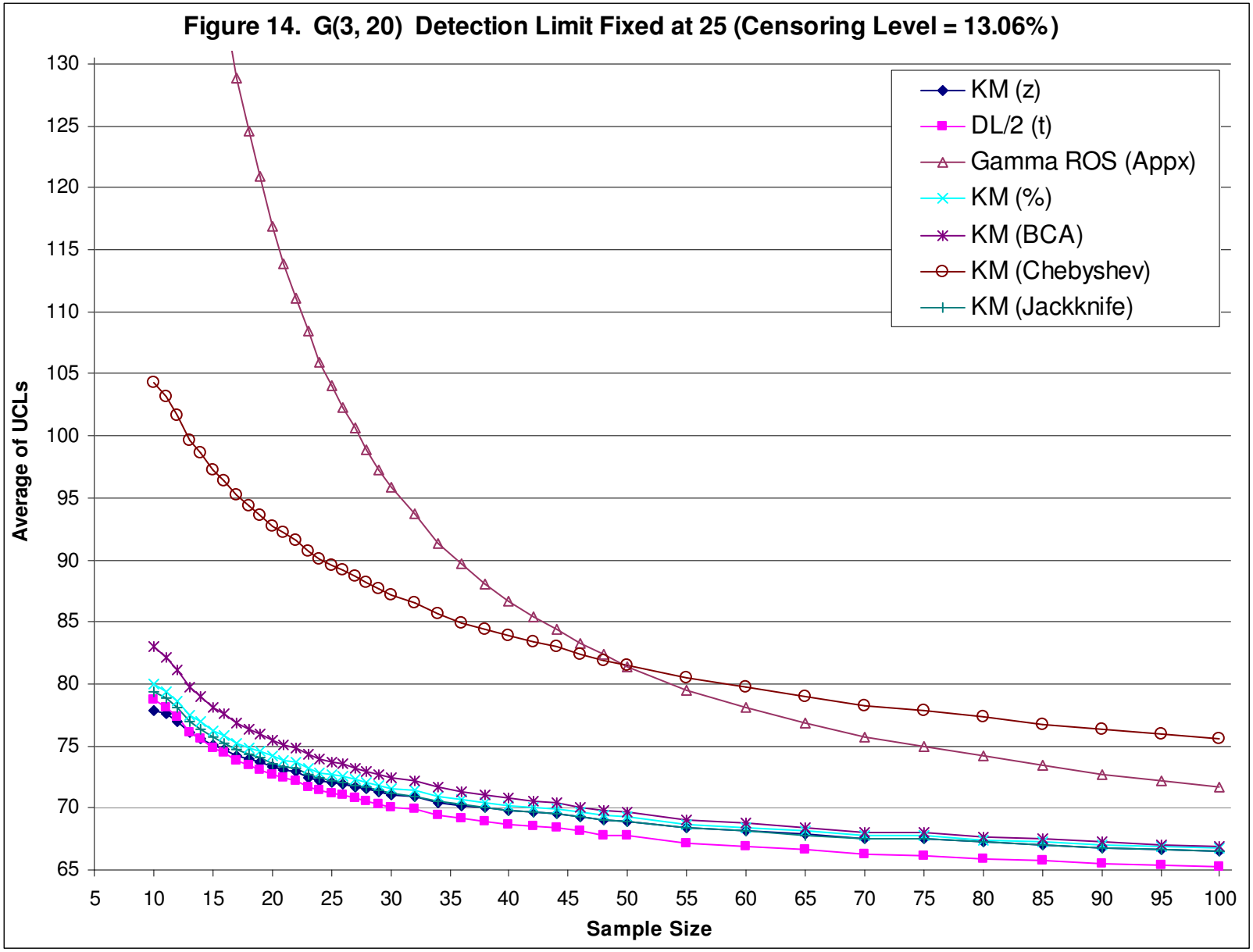
Figure 14. G(3, 20) Detection Limit Fixed at 25 (Censoring Level = 13.06%)
Average of UCLs
Sample Size
130
125
120
115
110
105
100
95
90
85
80
75
70
65
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
KM (z)
DL/2 (t)
Gamma ROS (Appx)
KM (%)
KM (BCA)
KM (Chebyshev)
KM (Jackknife)