

On modeling the relative fitness of storage (model appendices)

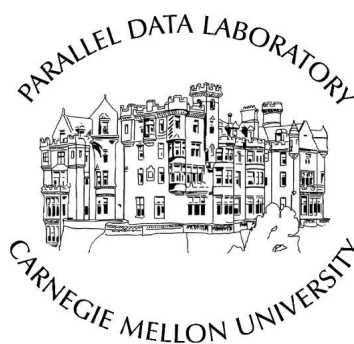
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November 27, 2007

*A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy*

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Appendix A

FitnessDirect models

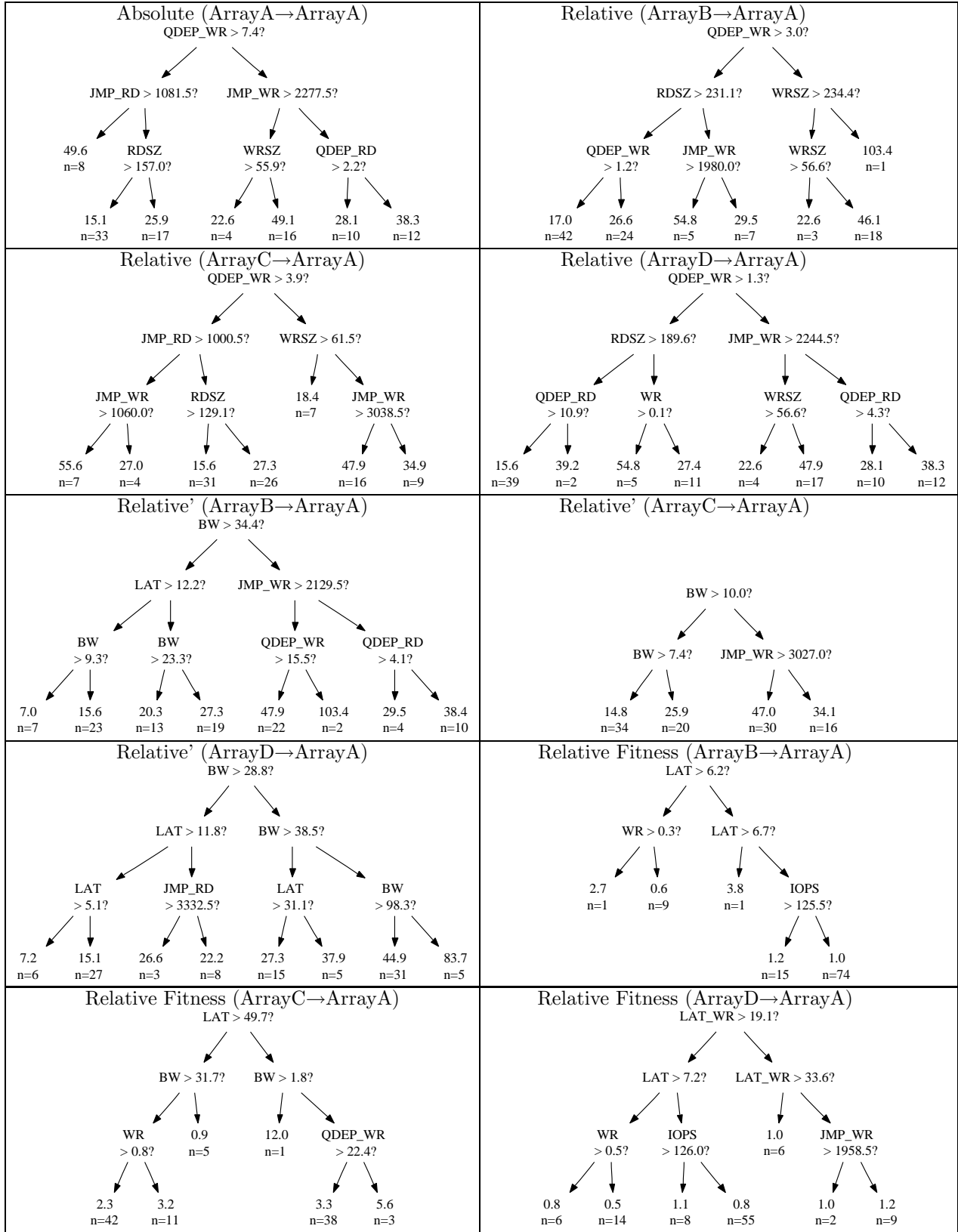


Table A.1: Bandwidth models of ArrayA.

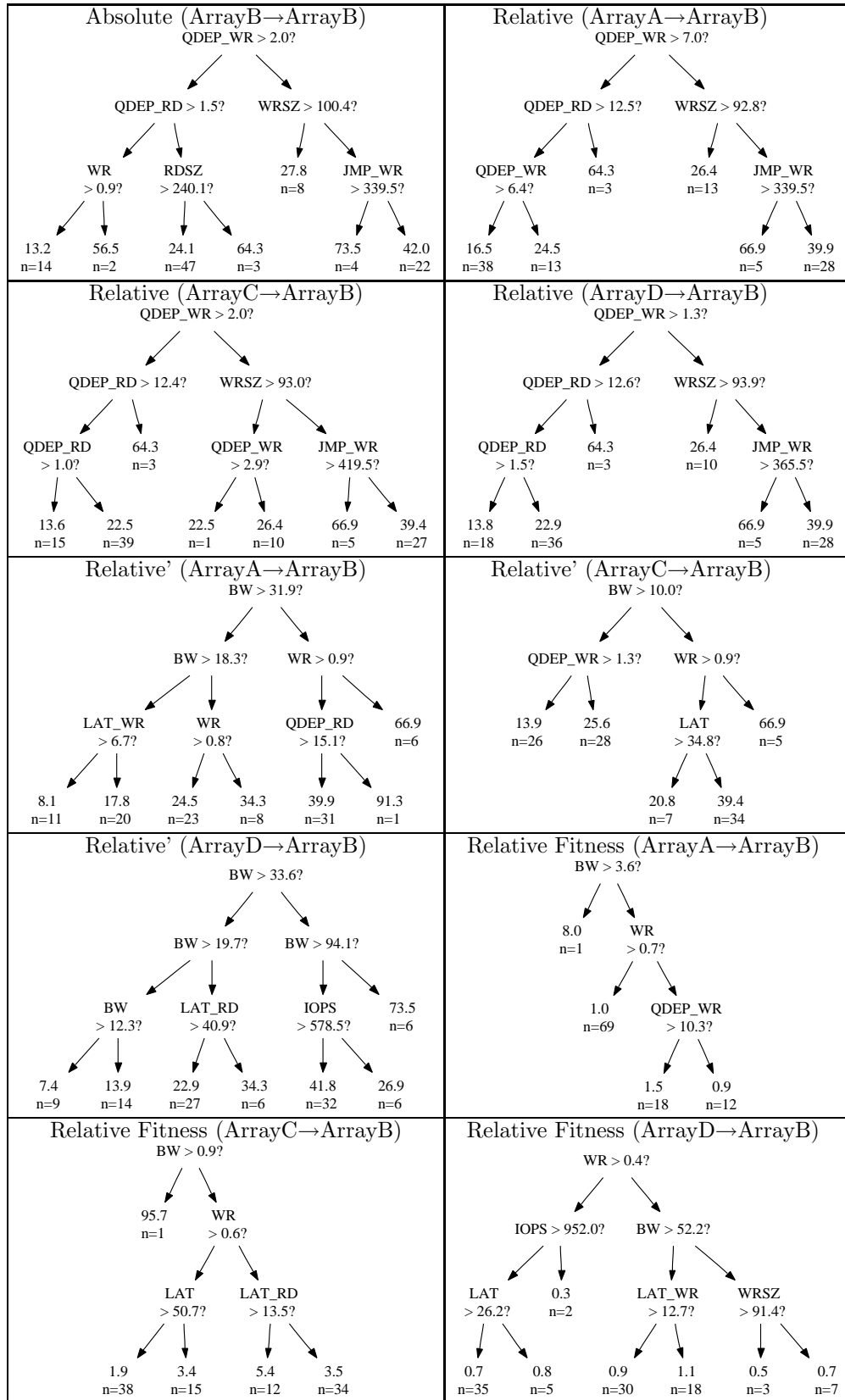


Table A.2: Bandwidth models of ArrayB.

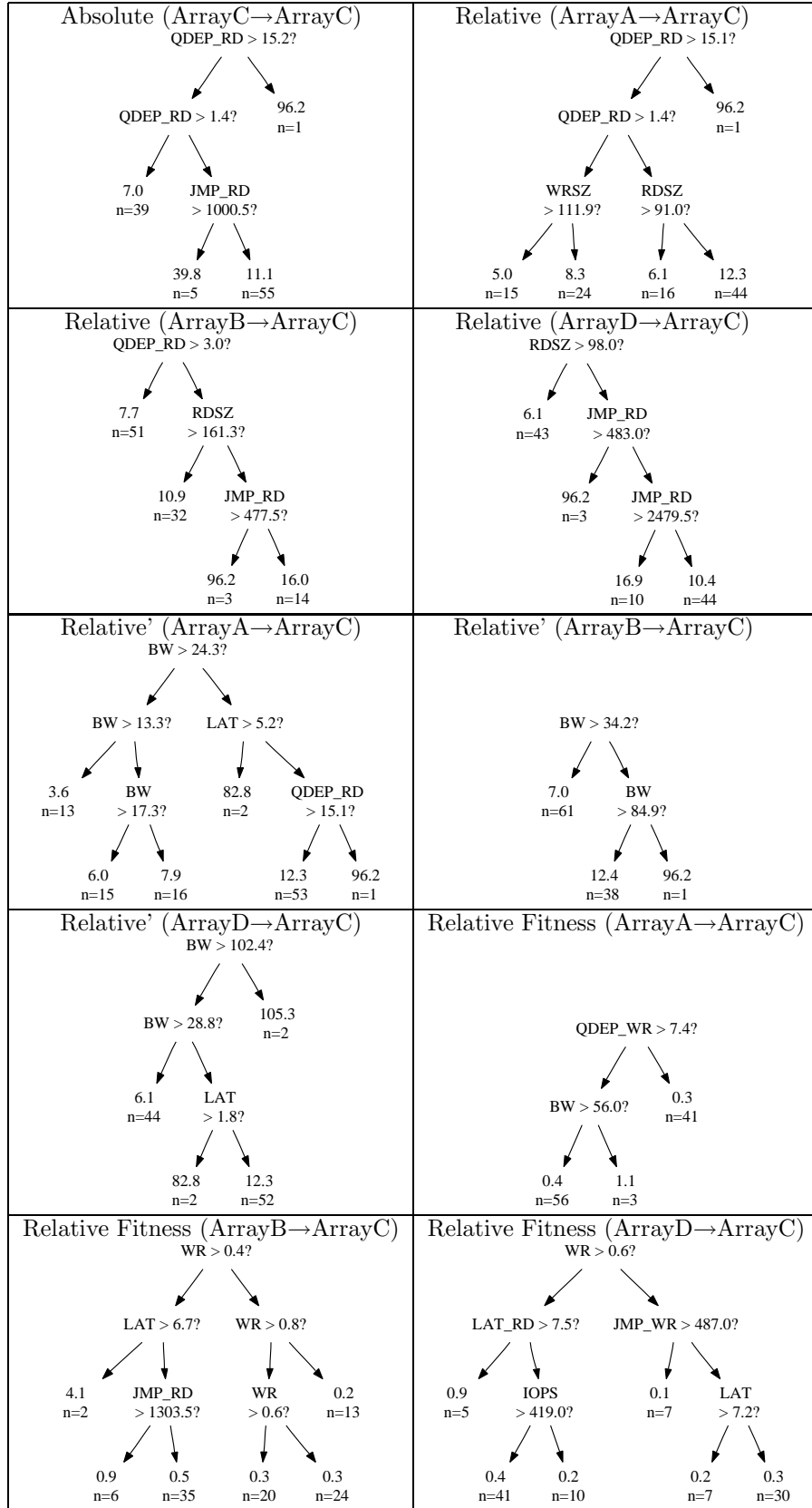


Table A.3: Bandwidth models of ArrayC.

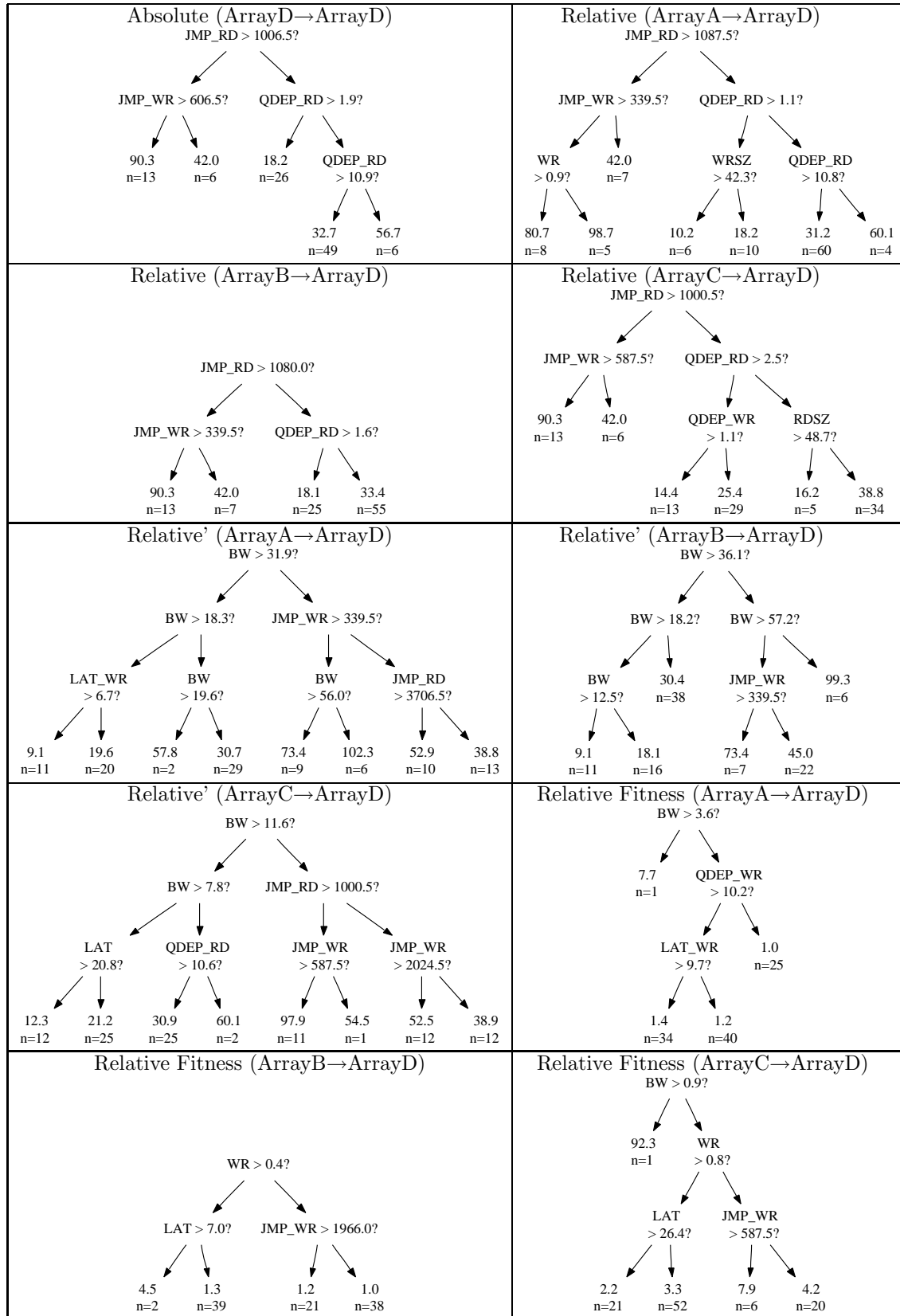


Table A.4: Bandwidth models of ArrayD.

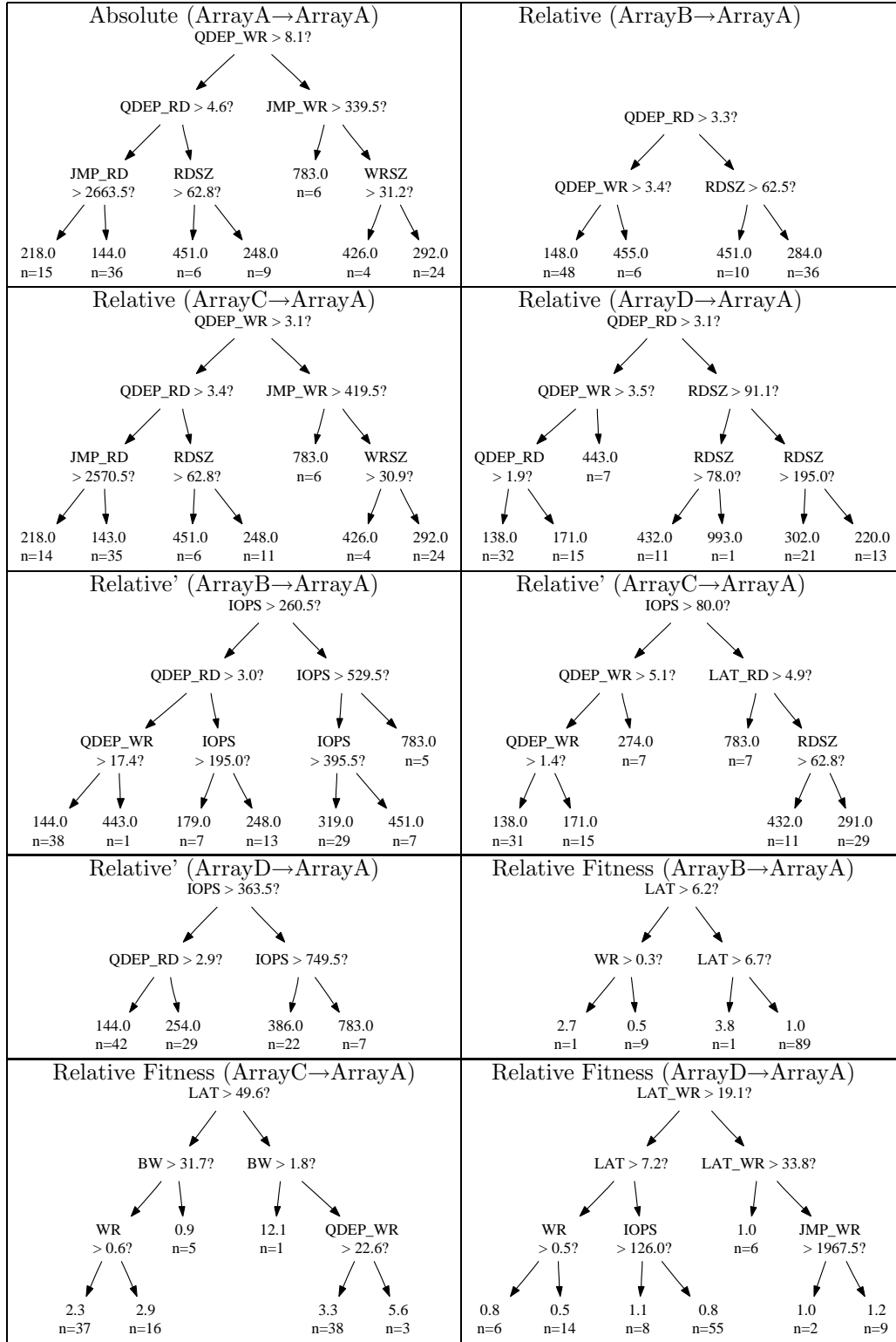


Table A.5: Throughput models of ArrayA.

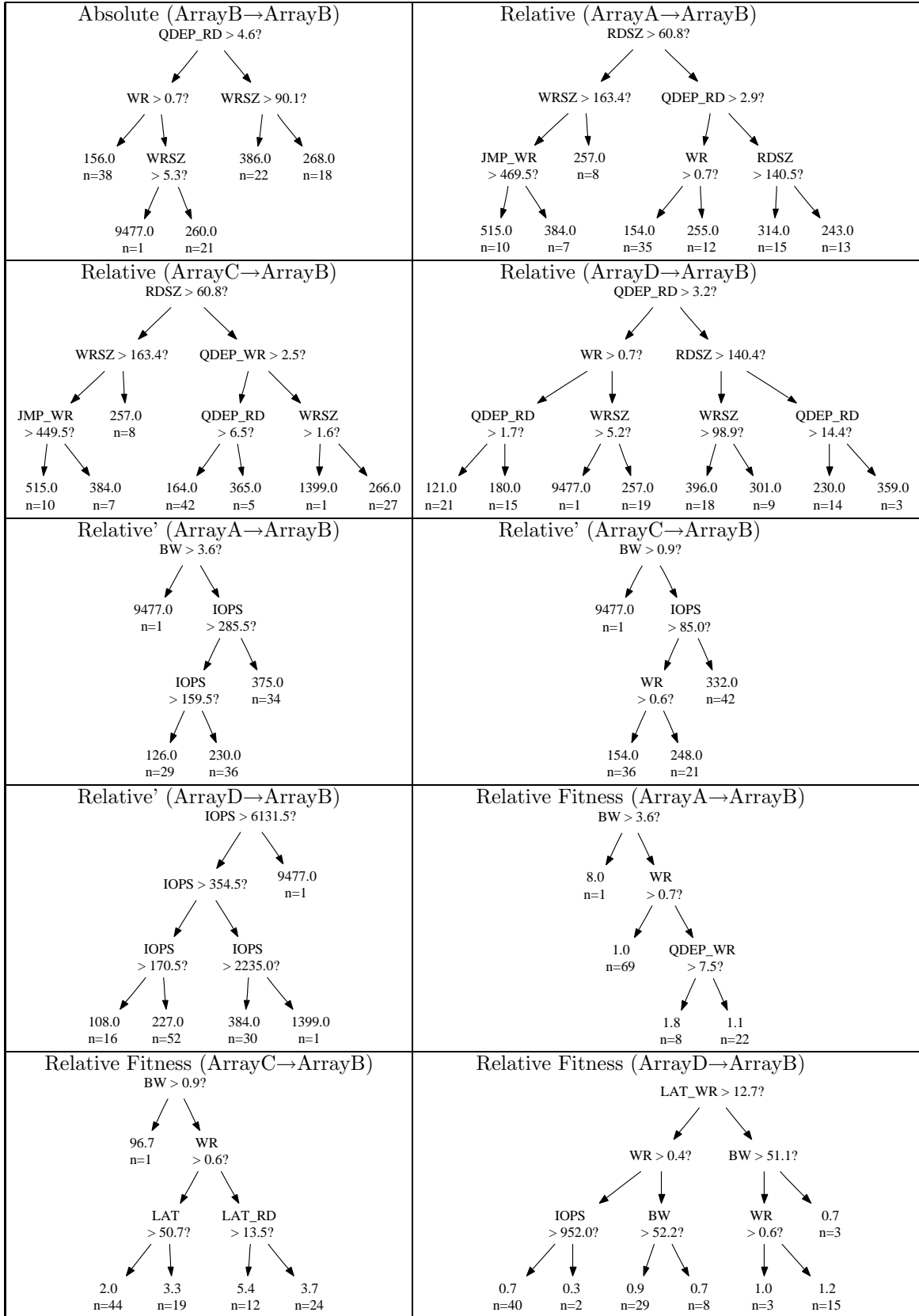


Table A.6: Throughput models of ArrayB.

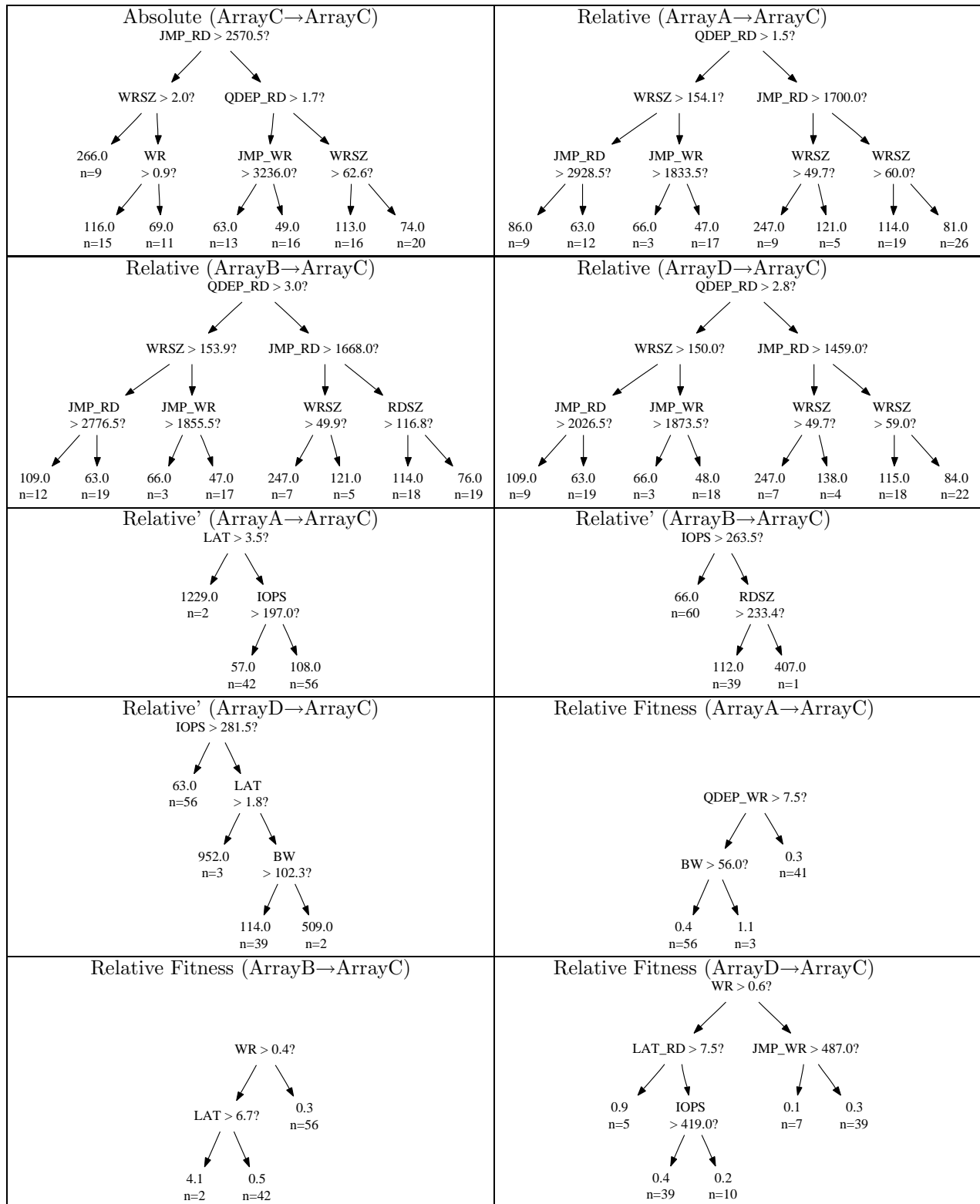


Table A.7: Throughput models of ArrayC.

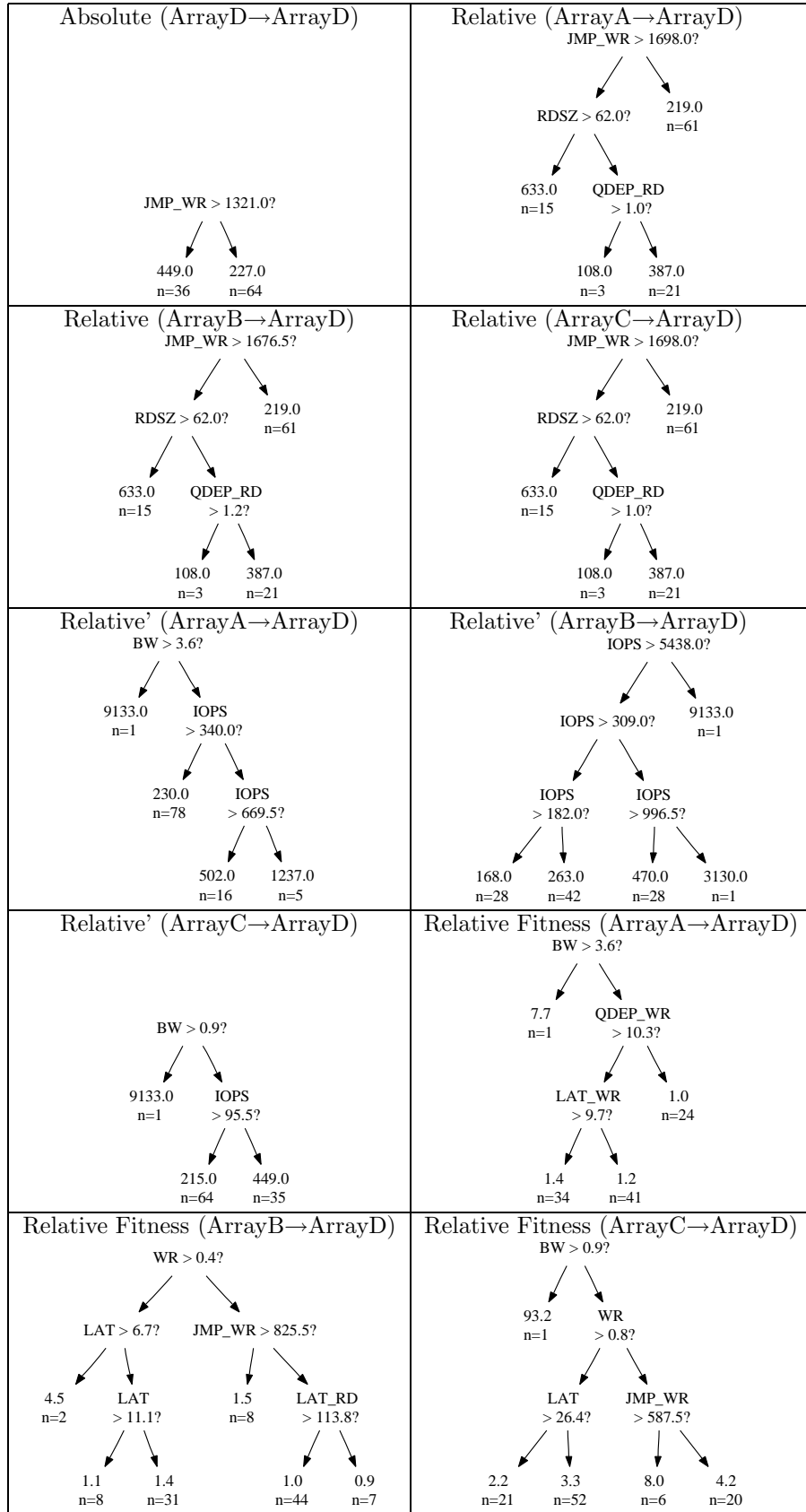


Table A.8: Throughput models of ArrayD.

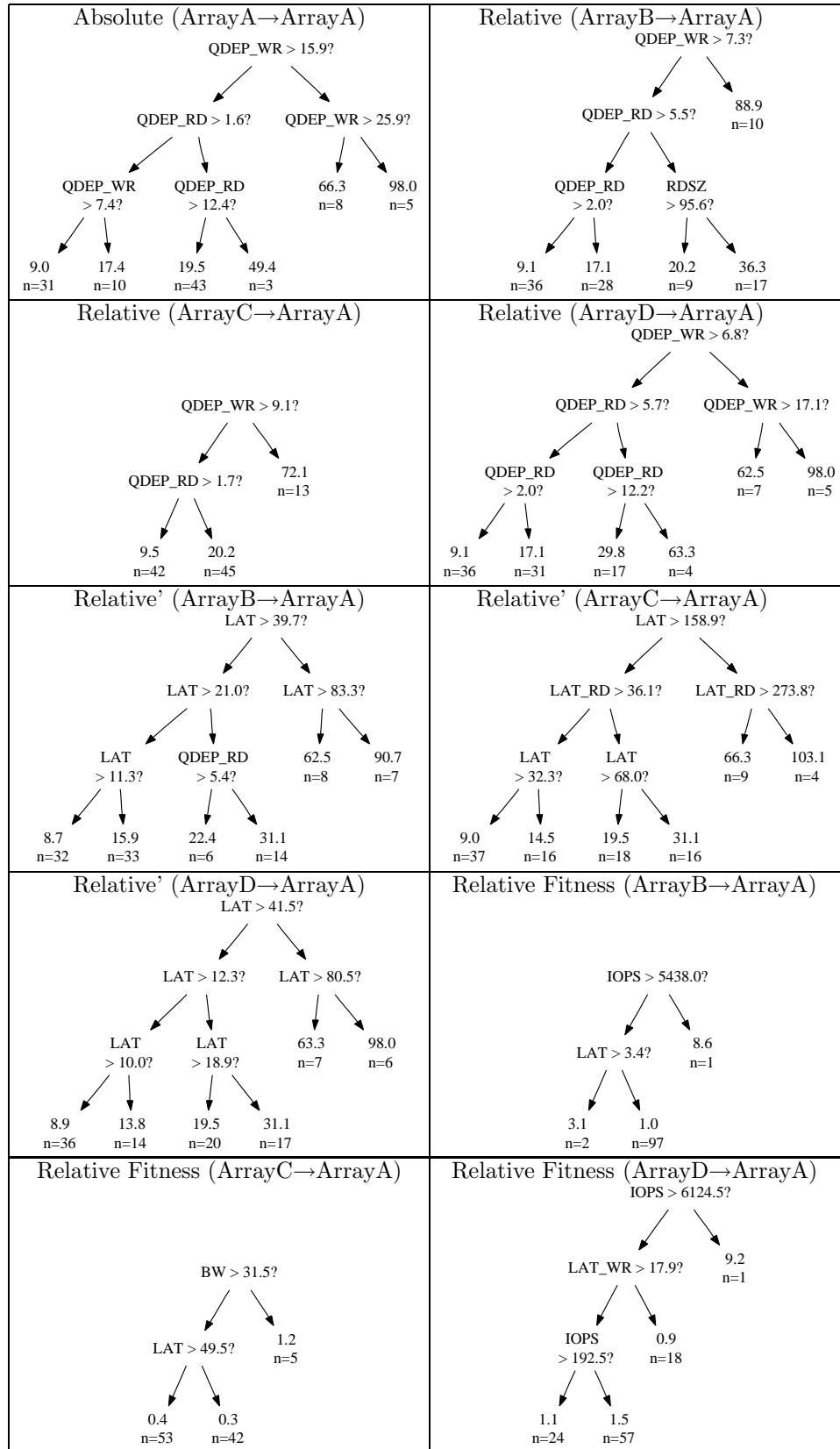


Table A.9: Latency models of ArrayA.

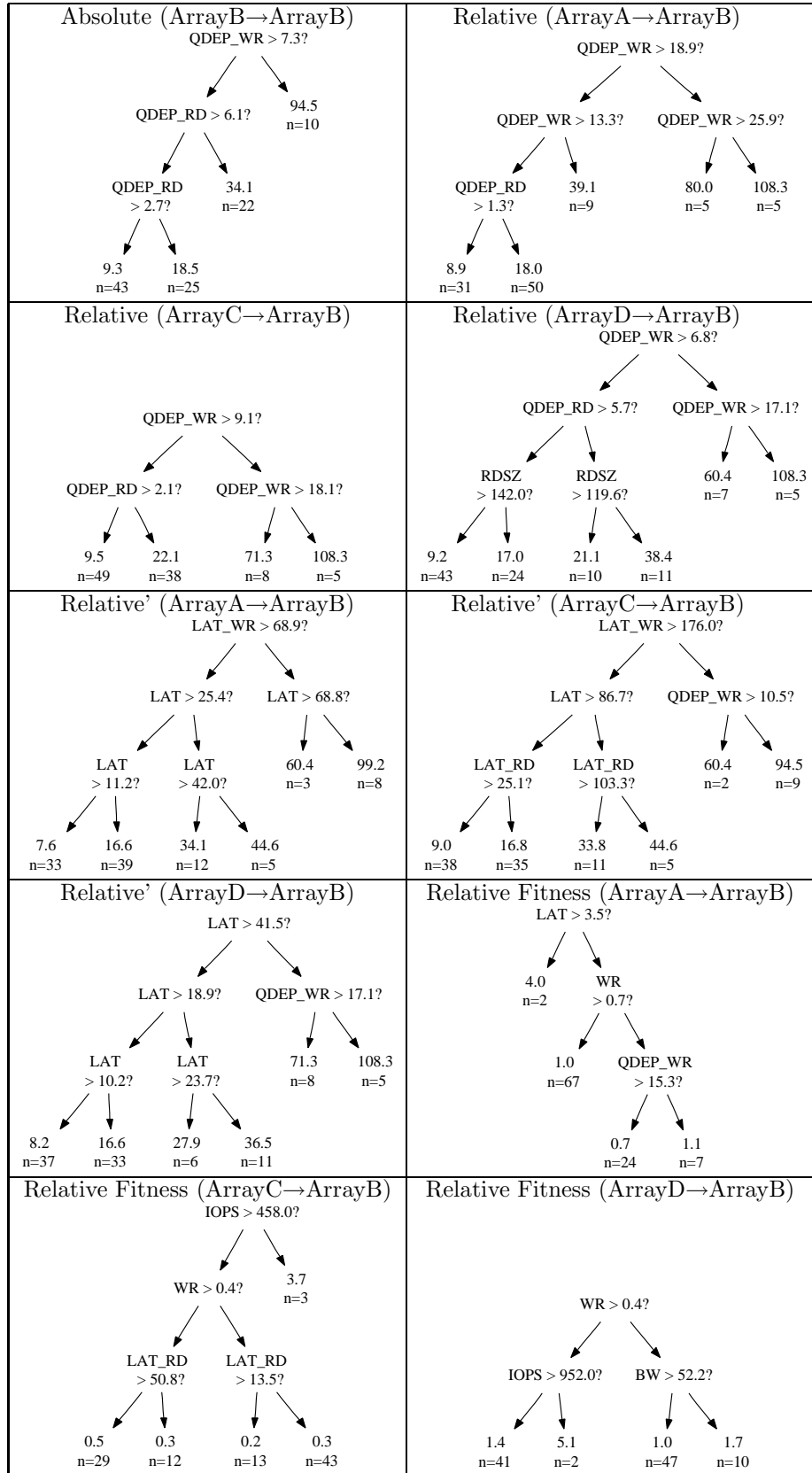


Table A.10: Latency models of ArrayB.

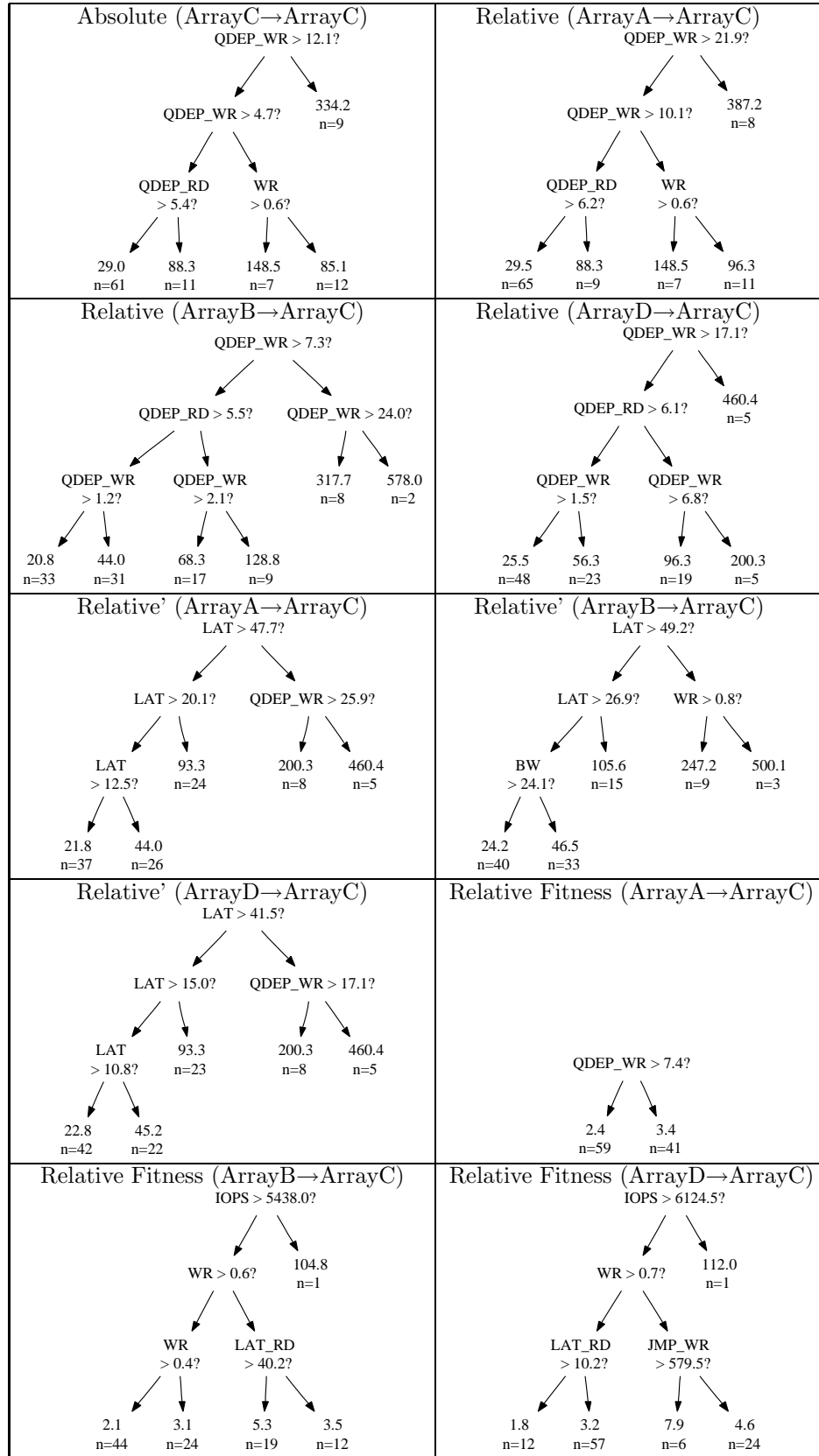


Table A.11: Latency models of ArrayC.

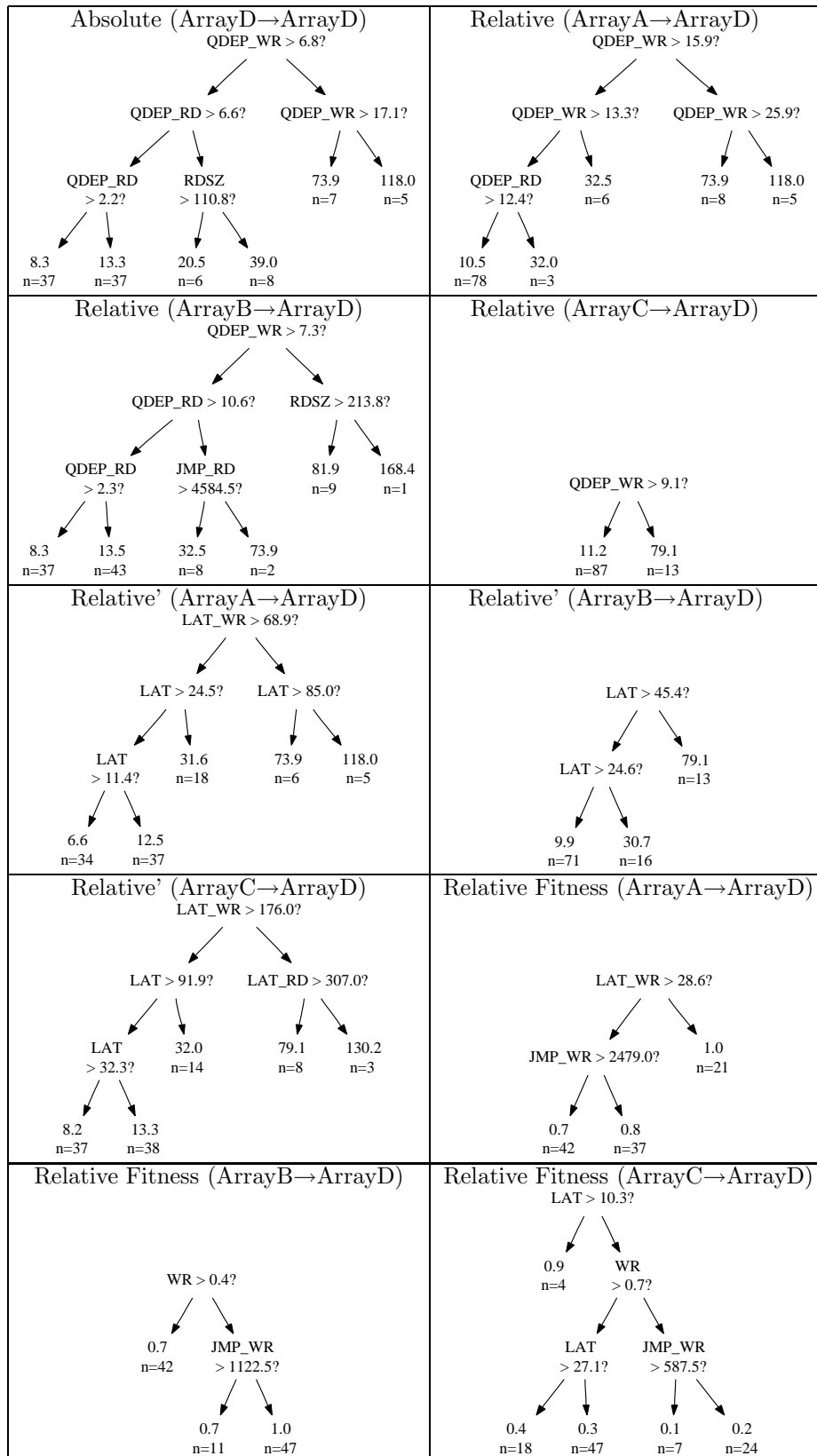


Table A.12: Latency models of ArrayD.

Appendix B

FitnessBuffered models

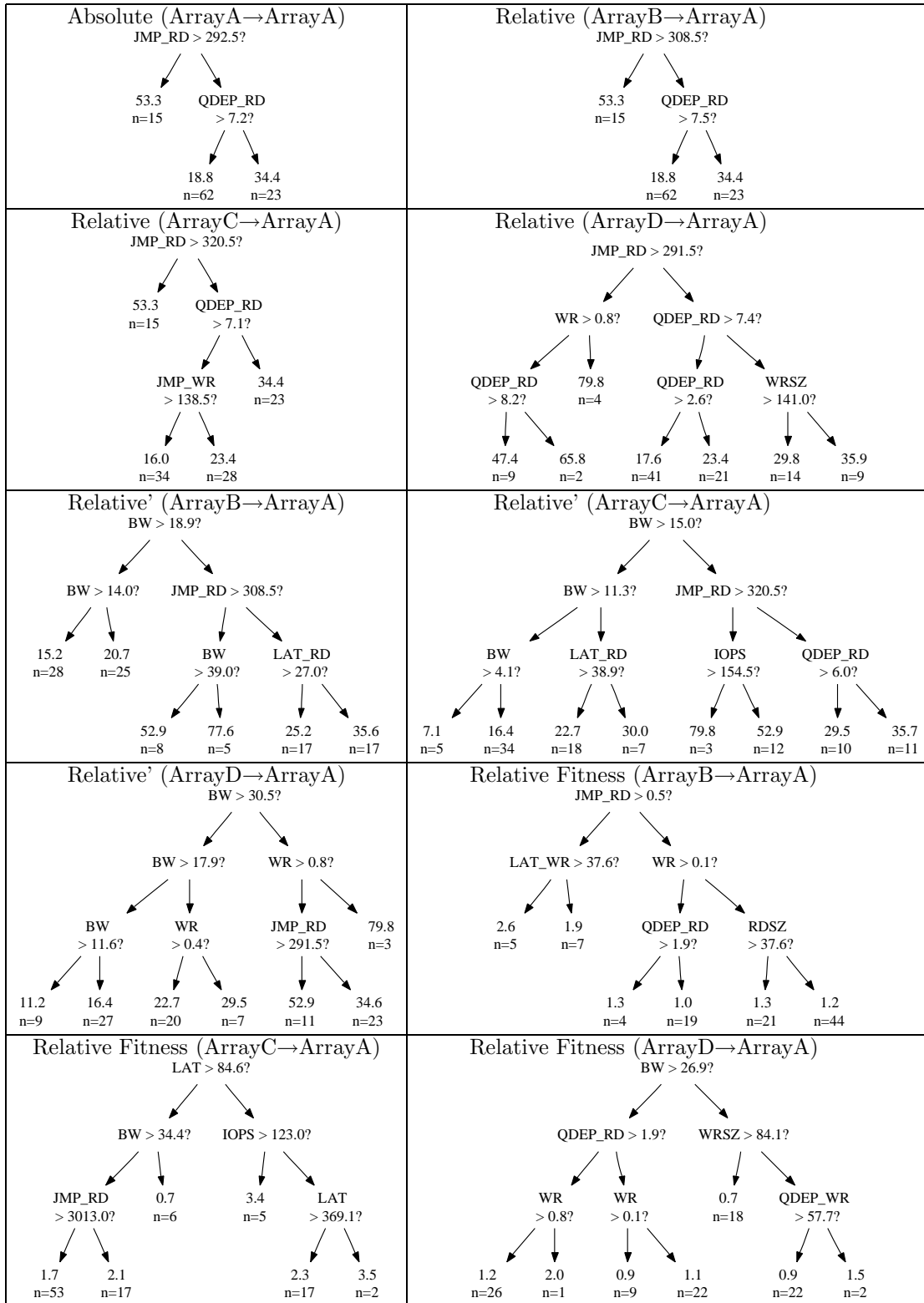


Table B.1: Bandwidth models of ArrayA.

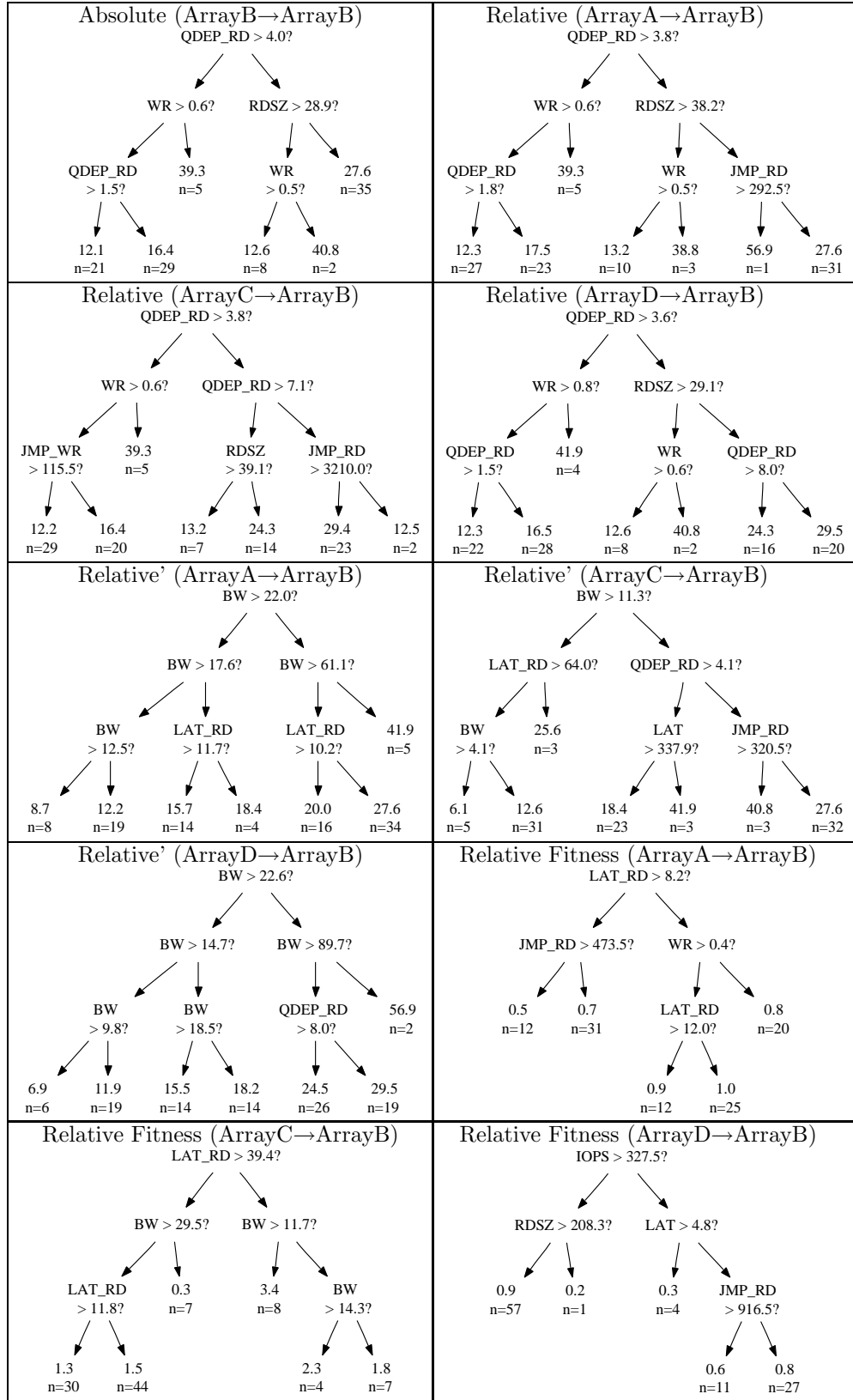


Table B.2: Bandwidth models of ArrayB.

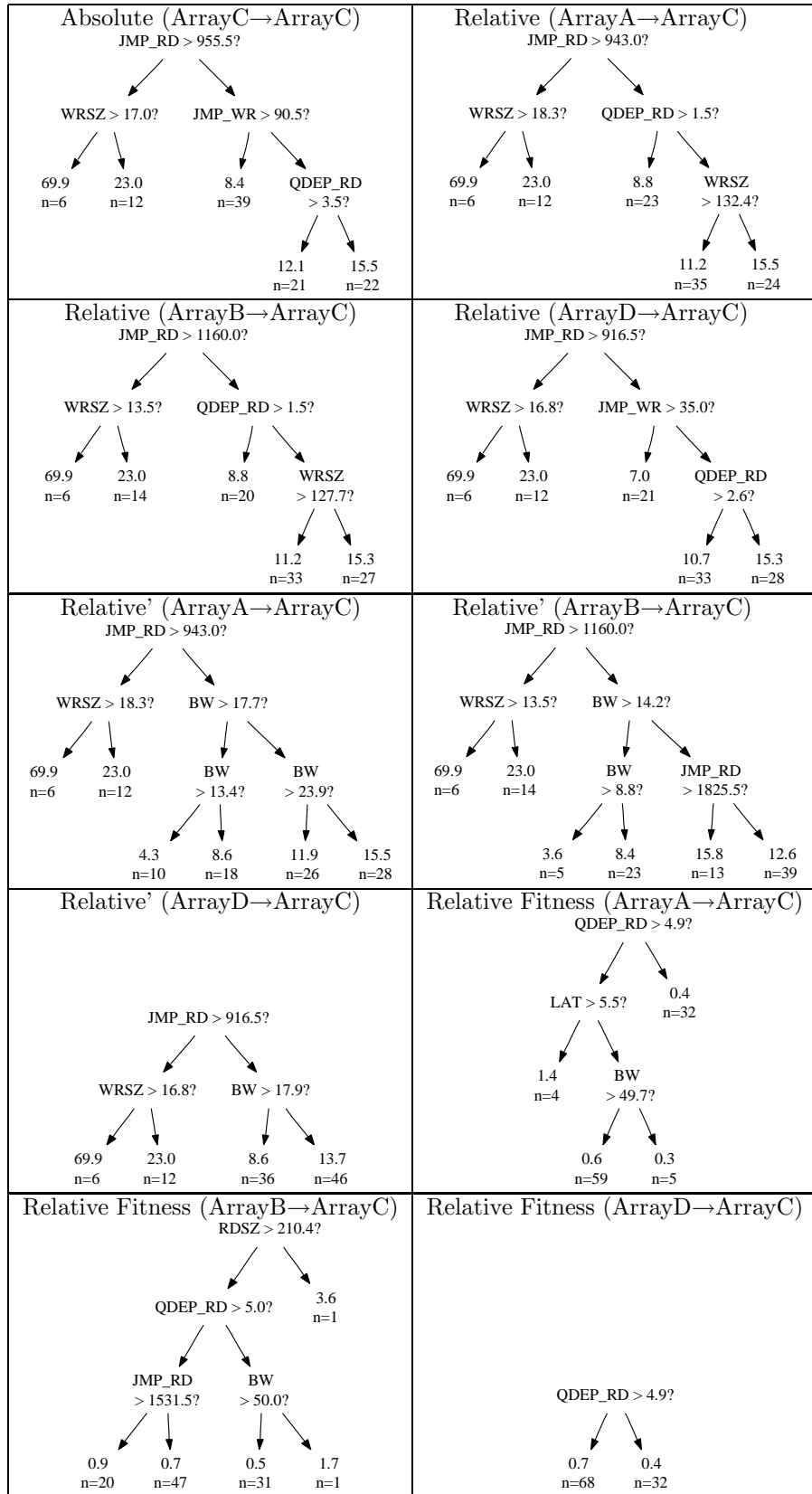


Table B.3: Bandwidth models of ArrayC.

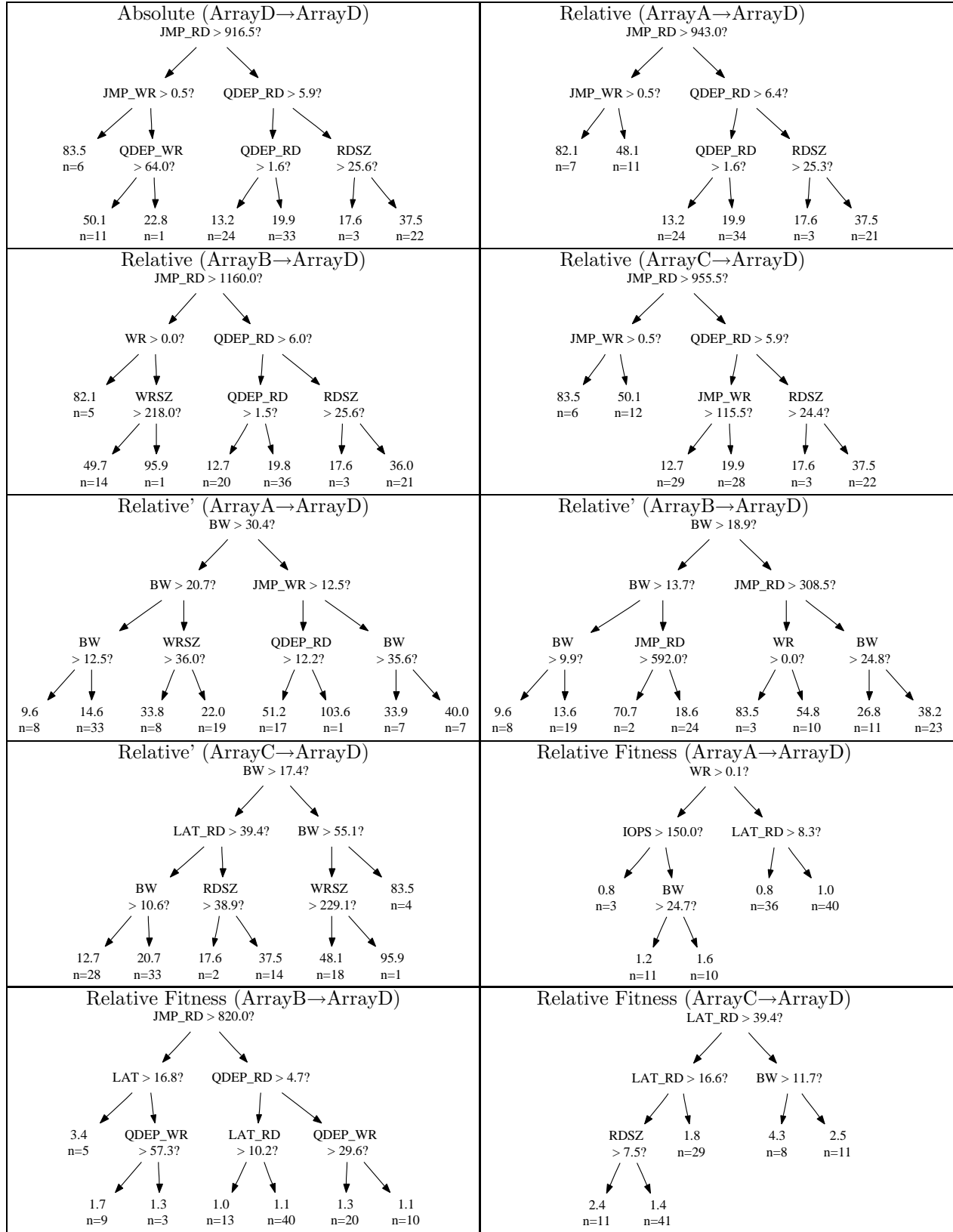


Table B.4: Bandwidth models of ArrayD.

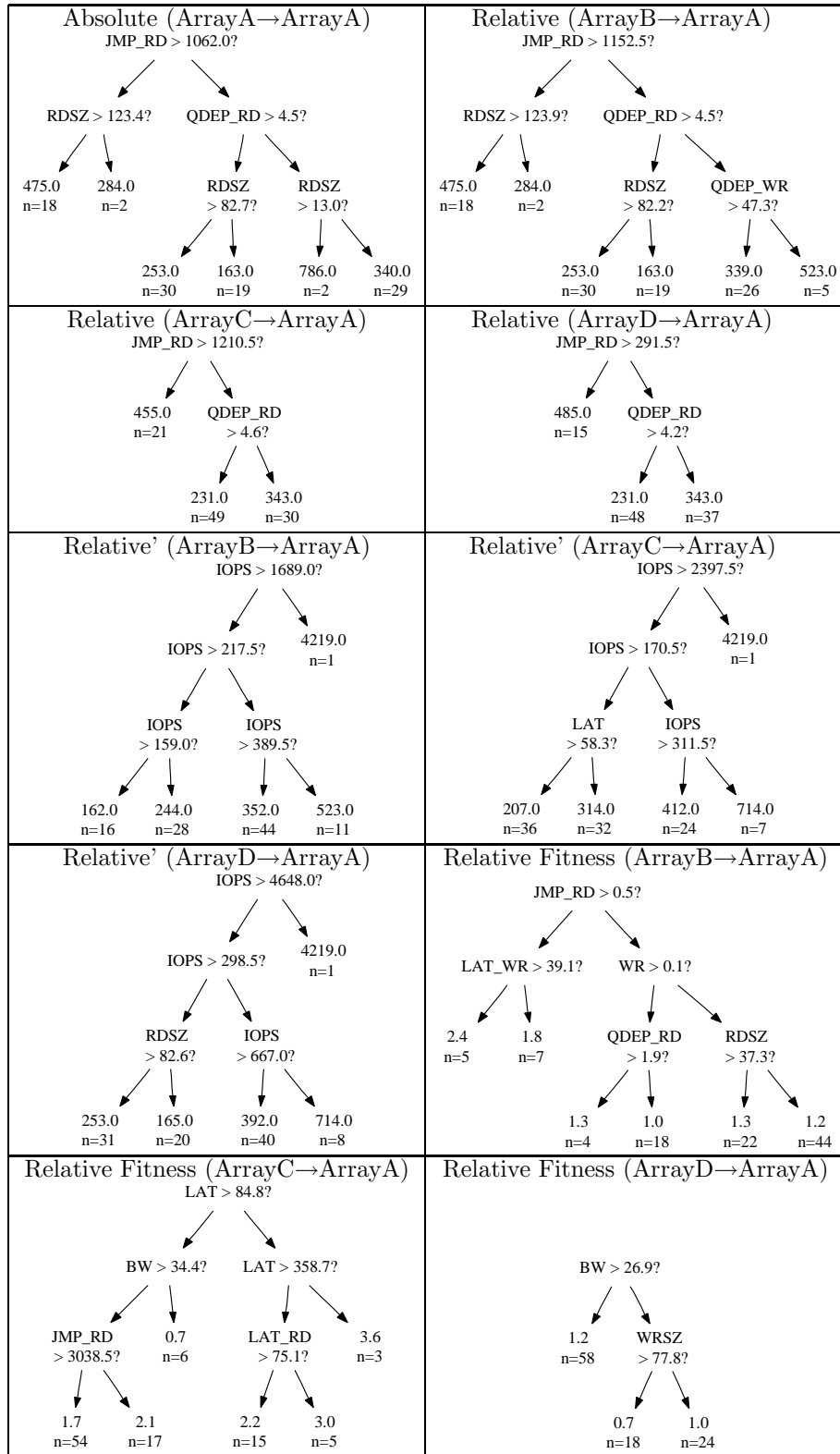


Table B.5: Throughput models of ArrayA.

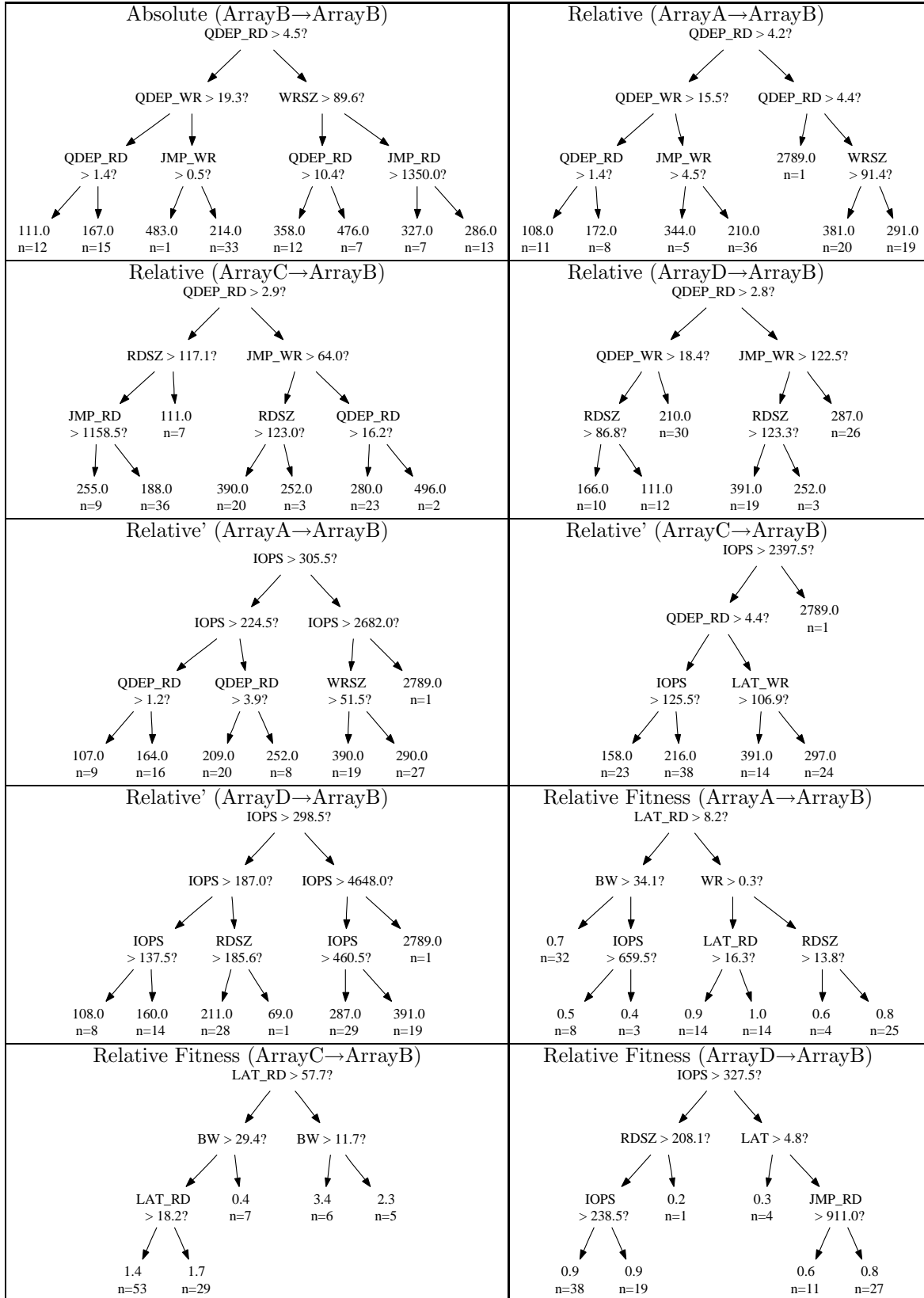


Table B.6: Throughput models of ArrayB.

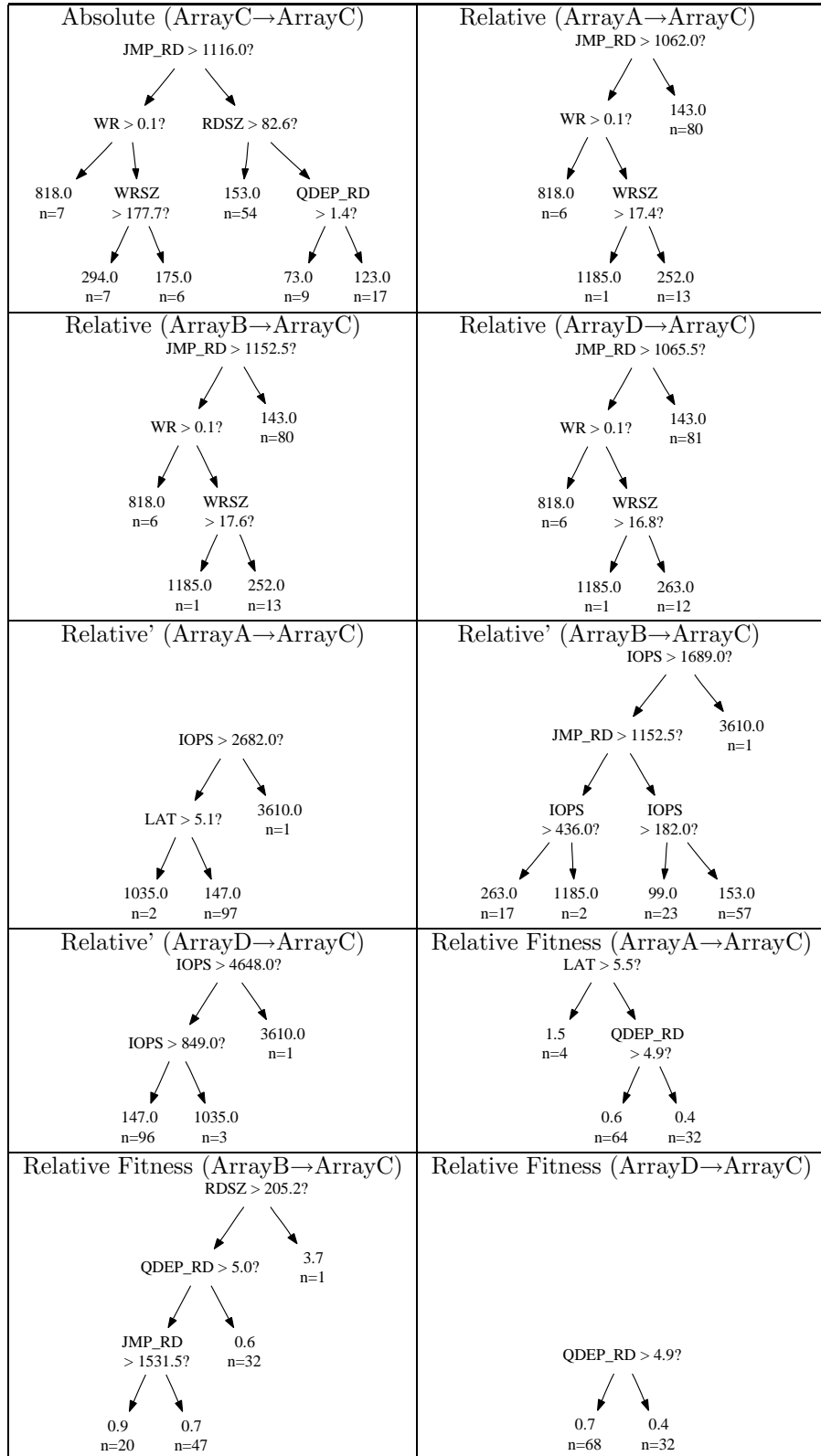


Table B.7: Throughput models of ArrayC.

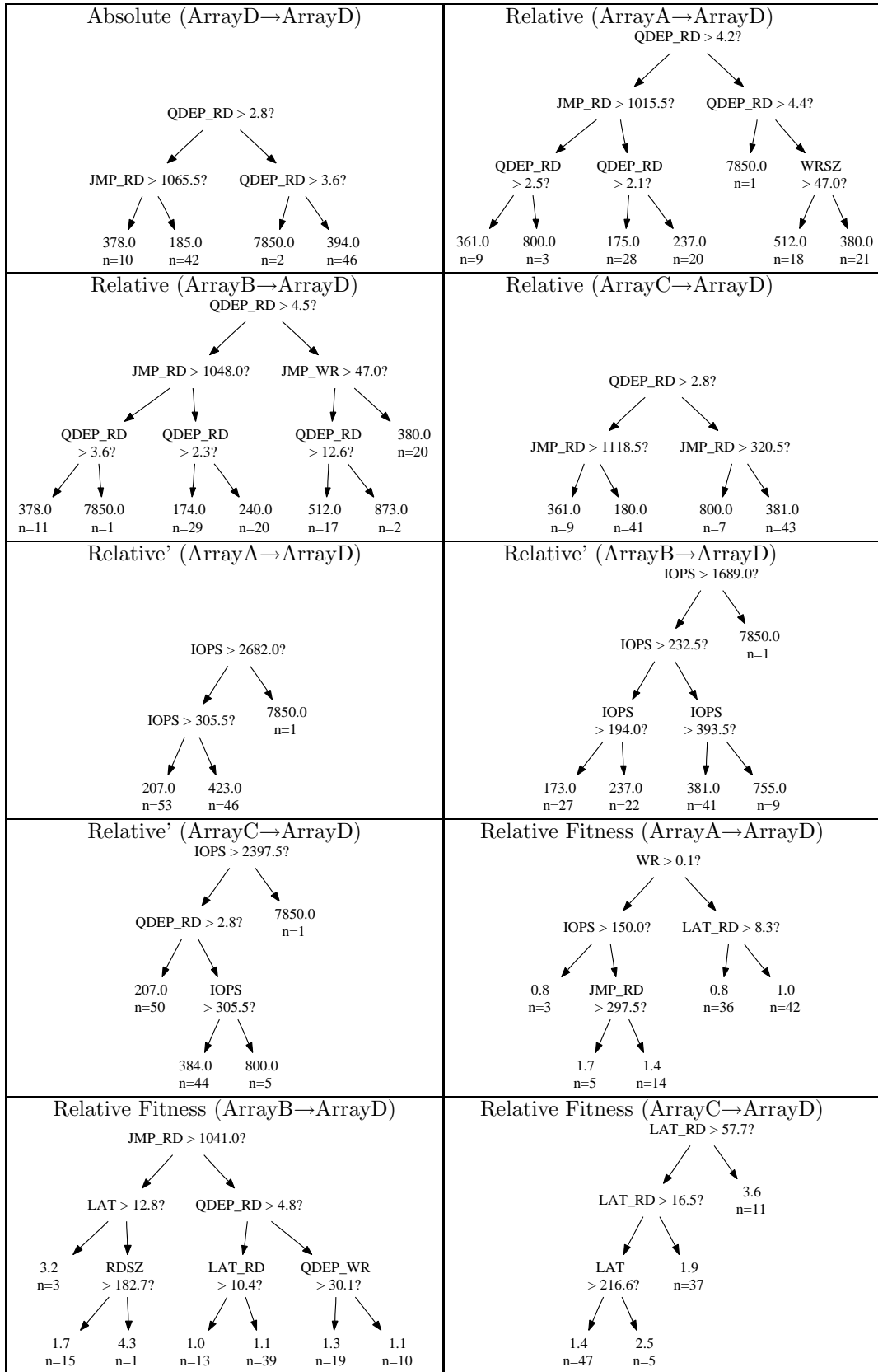


Table B.8: Throughput models of ArrayD.

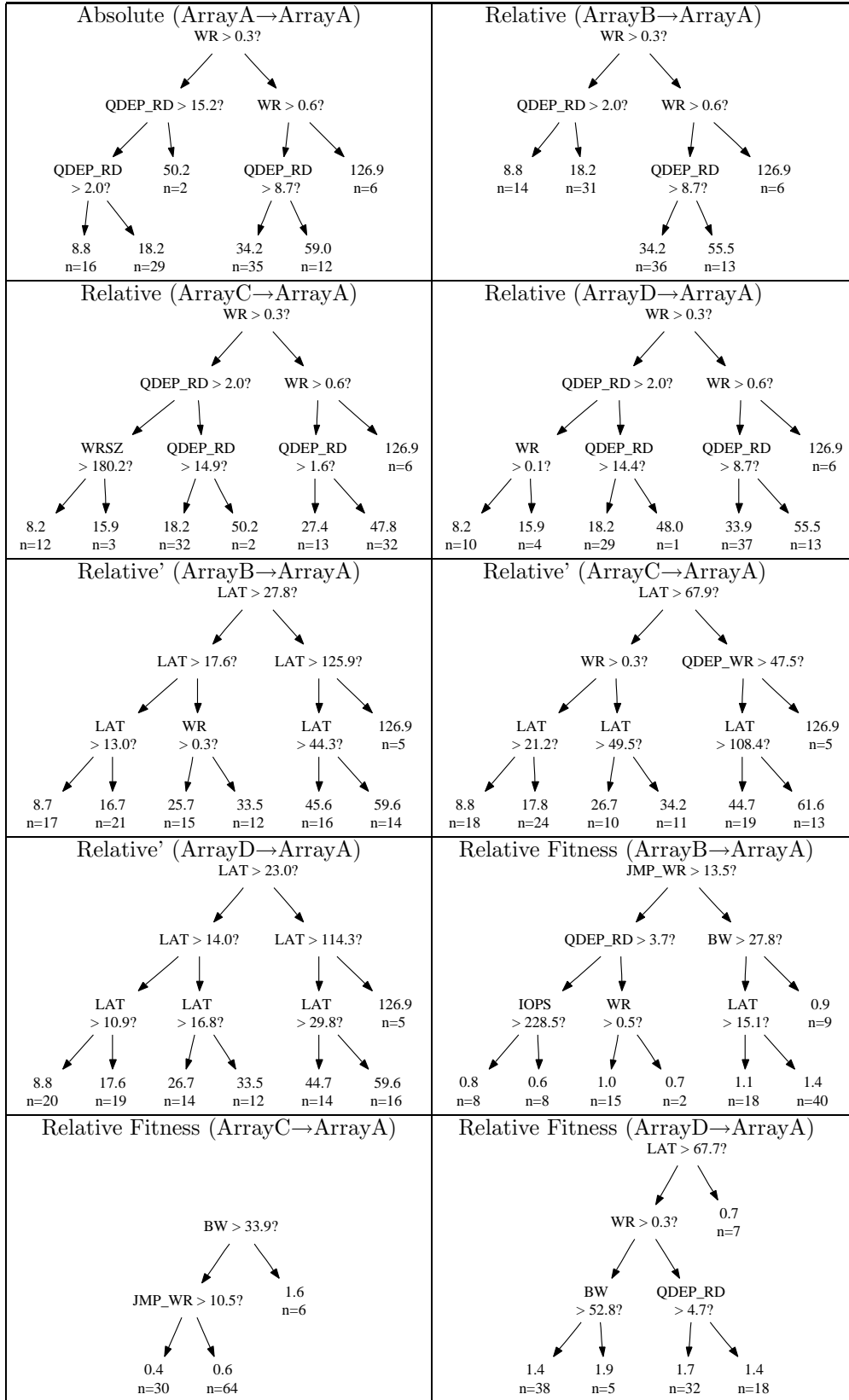


Table B.9: Latency models of ArrayA.

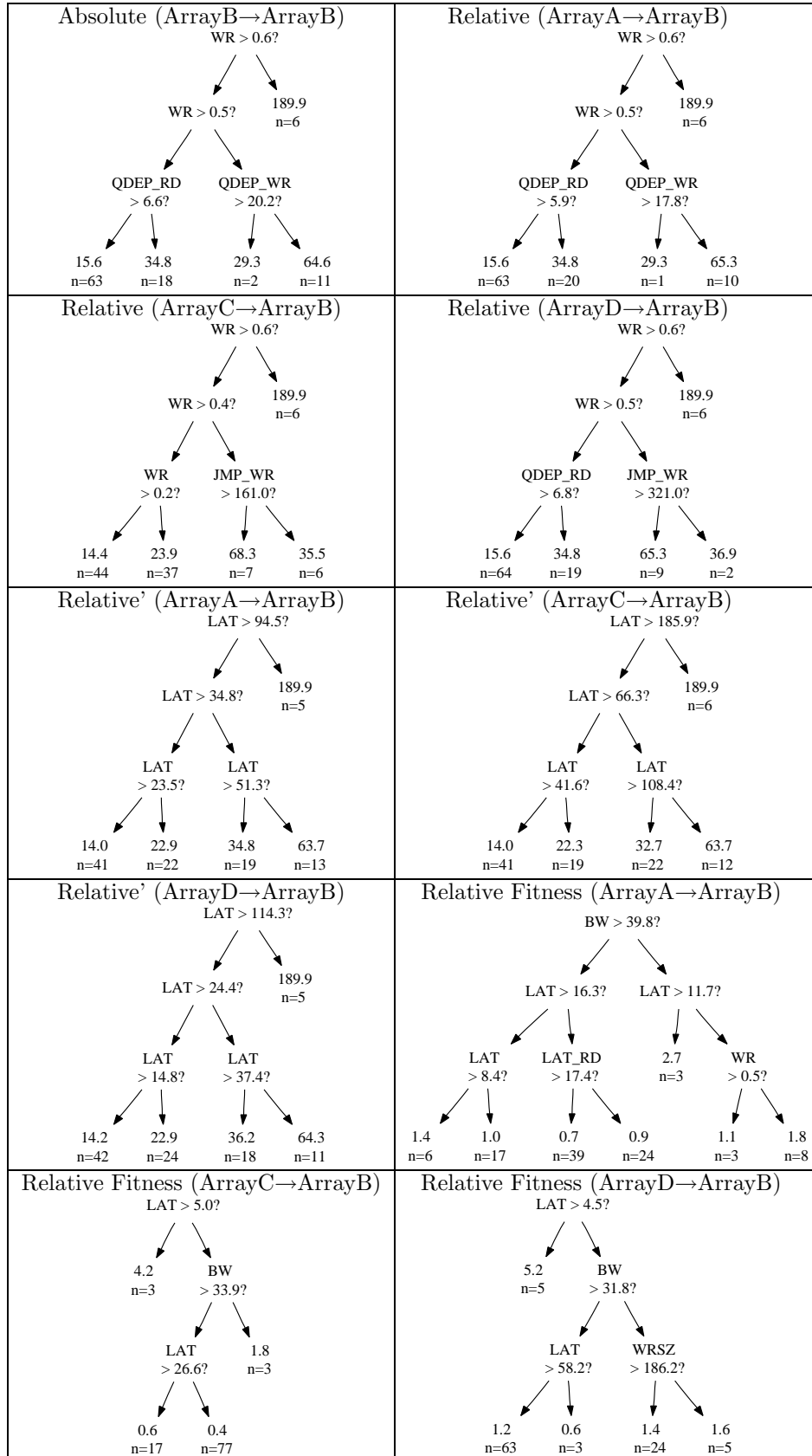


Table B.10: Latency models of ArrayB.

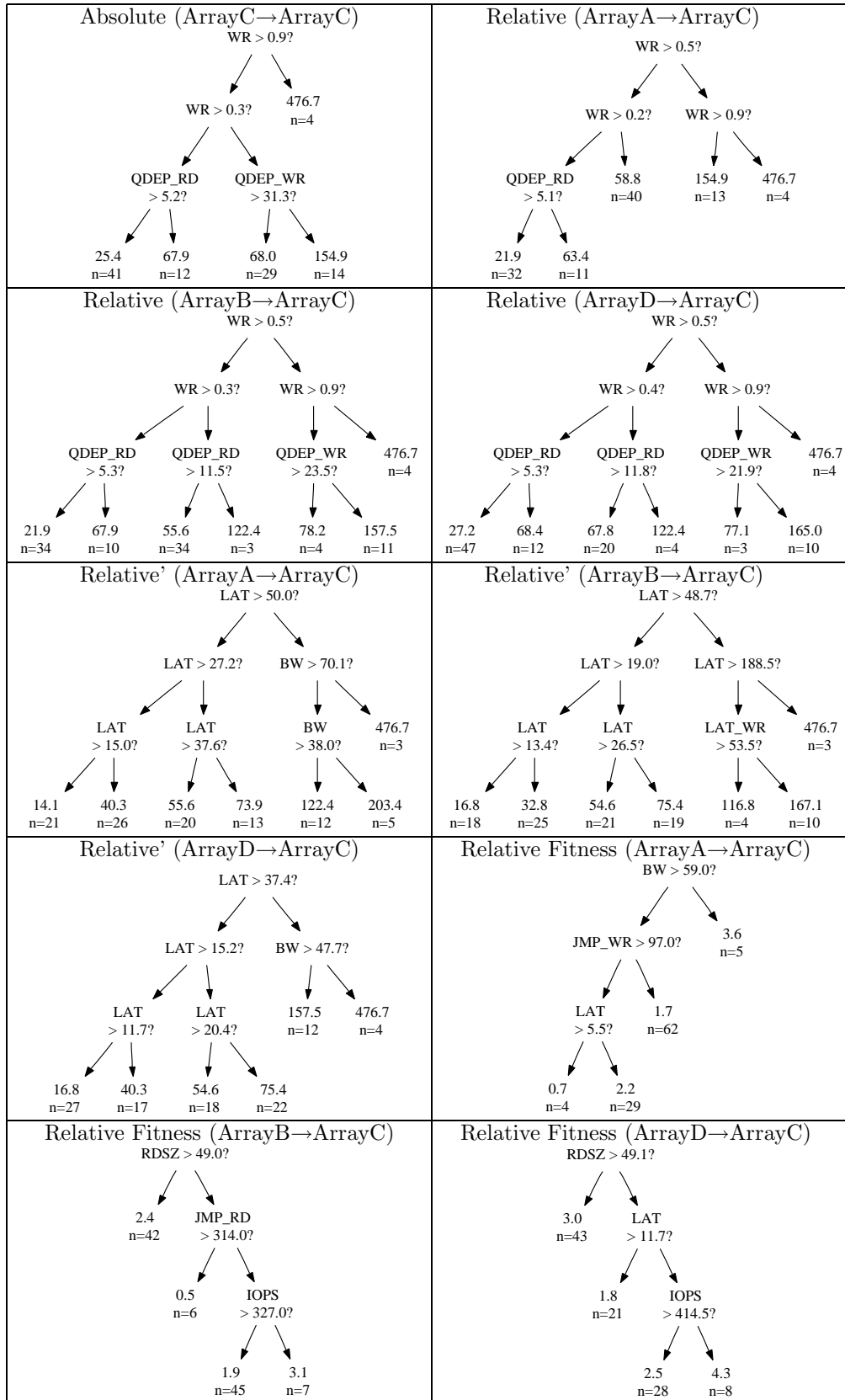


Table B.11: Latency models of ArrayC.

<p>Absolute (ArrayD→ArrayD)</p> <pre> graph TD A["WR > 0.9?"] --> B["WR > 0.4?"] A --> C["205.2 n=4"] B --> D["12.3 n=59"] B --> E["27.3 n=37"] </pre>	<p>Relative (ArrayA→ArrayD)</p> <pre> graph TD A["RDSZ > 4.0?"] --> B["190.6 n=5"] A --> C["WR > 0.4?"] C --> D["WR > 0.2?"] C --> E["WR > 0.6?"] D --> F["11.3 n=43"] D --> G["16.8 n=18"] E --> H["26.6 n=32"] E --> I["117.9 n=2"] </pre>
<p>Relative (ArrayB→ArrayD)</p> <pre> graph TD A["RDSZ > 4.0?"] --> B["190.6 n=5"] A --> C["WR > 0.3?"] C --> D["12.3 n=58"] C --> E["WR > 0.6?"] E --> F["25.7 n=35"] E --> G["117.9 n=2"] </pre>	<p>Relative (ArrayC→ArrayD)</p> <pre> graph TD A["WR > 0.9?"] --> B["WR > 0.3?"] A --> C["205.2 n=4"] B --> D["12.3 n=61"] B --> E["27.3 n=35"] </pre>
<p>Relative' (ArrayA→ArrayD)</p> <pre> graph TD A["LAT > 94.5?"] --> B["LAT > 37.6?"] A --> C["190.6 n=5"] B --> D["LAT > 19.3?"] B --> E["LAT > 50.3?"] D --> F["10.1 n=34"] D --> G["16.5 n=33"] E --> H["27.4 n=14"] E --> I["44.3 n=14"] </pre>	<p>Relative' (ArrayB→ArrayD)</p> <pre> graph TD A["LAT > 125.9?"] --> B["LAT > 27.8?"] A --> C["190.6 n=5"] B --> D["LAT > 17.6?"] B --> E["LAT > 40.4?"] D --> F["10.8 n=38"] D --> G["16.7 n=27"] E --> H["27.3 n=14"] E --> I["40.9 n=16"] </pre>
<p>Relative' (ArrayC→ArrayD)</p> <pre> graph TD A["WR > 0.9?"] --> B["LAT > 66.3?"] A --> C["205.2 n=4"] B --> D["LAT > 32.4?"] B --> E["LAT > 100.9?"] D --> F["9.6 n=30"] D --> G["16.4 n=30"] E --> H["25.7 n=21"] E --> I["44.3 n=15"] </pre>	<p>Relative Fitness (ArrayA→ArrayD)</p> <pre> graph TD A["RDSZ > 4.0?"] --> B["1.5 n=5"] A --> C["IOPS > 141.0?"] C --> D["1.2 n=5"] C --> E["LAT_RD > 8.0?"] D --> F["0.6 n=34"] E --> G["0.7 n=56"] </pre>
<p>Relative Fitness (ArrayB→ArrayD)</p> <pre> graph TD A["JMP_RD > 816.0?"] --> B["LAT > 16.5?"] A --> C["QDEP_RD > 4.6?"] B --> D["0.2 n=5"] B --> E["0.7 n=12"] C --> F["0.8 n=53"] C --> G["RDSZ > 7.1?"] G --> H["1.6 n=1"] G --> I["0.7 n=29"] </pre>	<p>Relative Fitness (ArrayC→ArrayD)</p> <pre> graph TD A["LAT > 27.2?"] --> B["WR > 0.0?"] A --> C["0.3 n=76"] B --> D["0.8 n=11"] B --> E["0.5 n=13"] </pre>

Table B.12: Latency models of ArrayD.

Appendix C

FitnessFS models

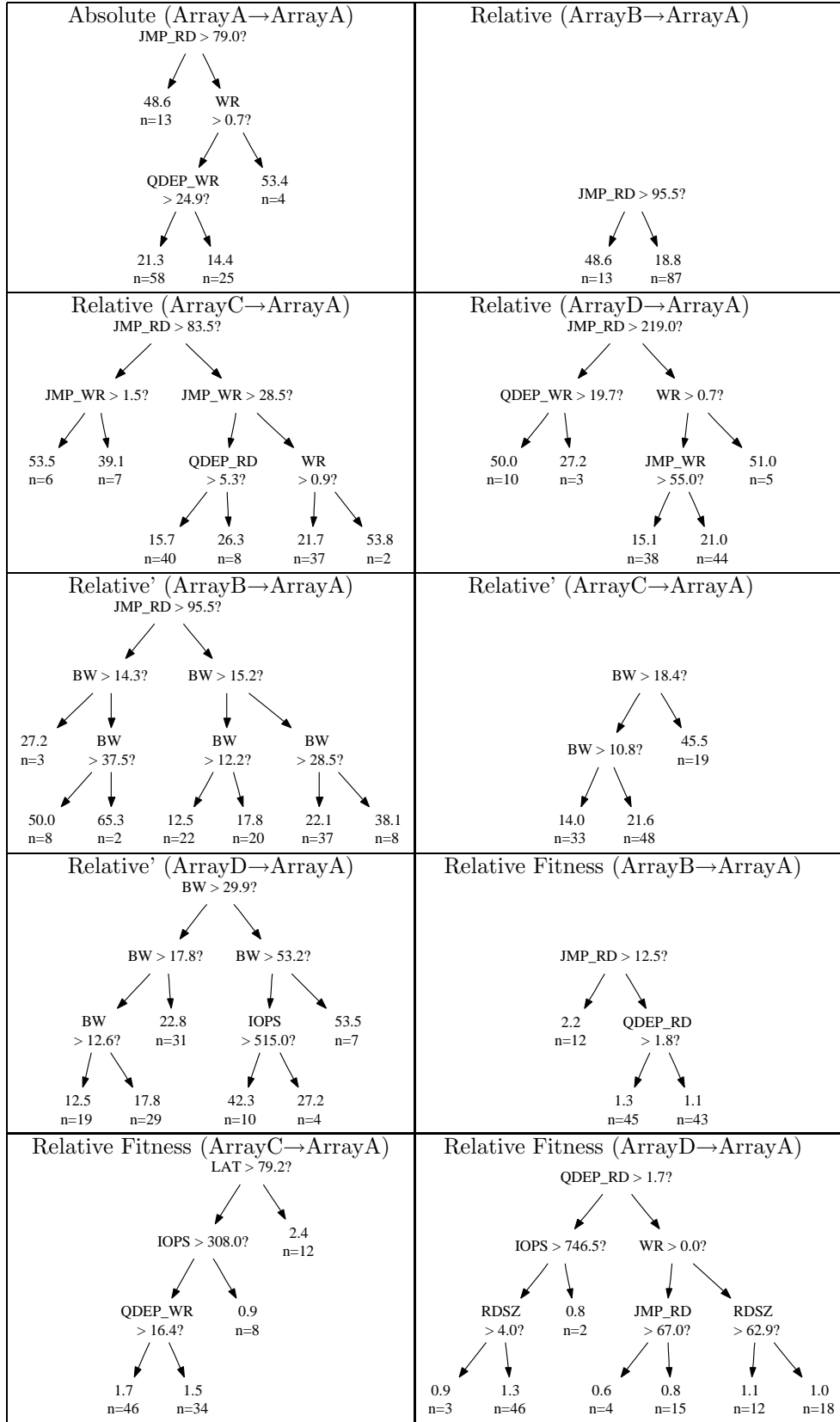


Table C.1: Bandwidth models of ArrayA.

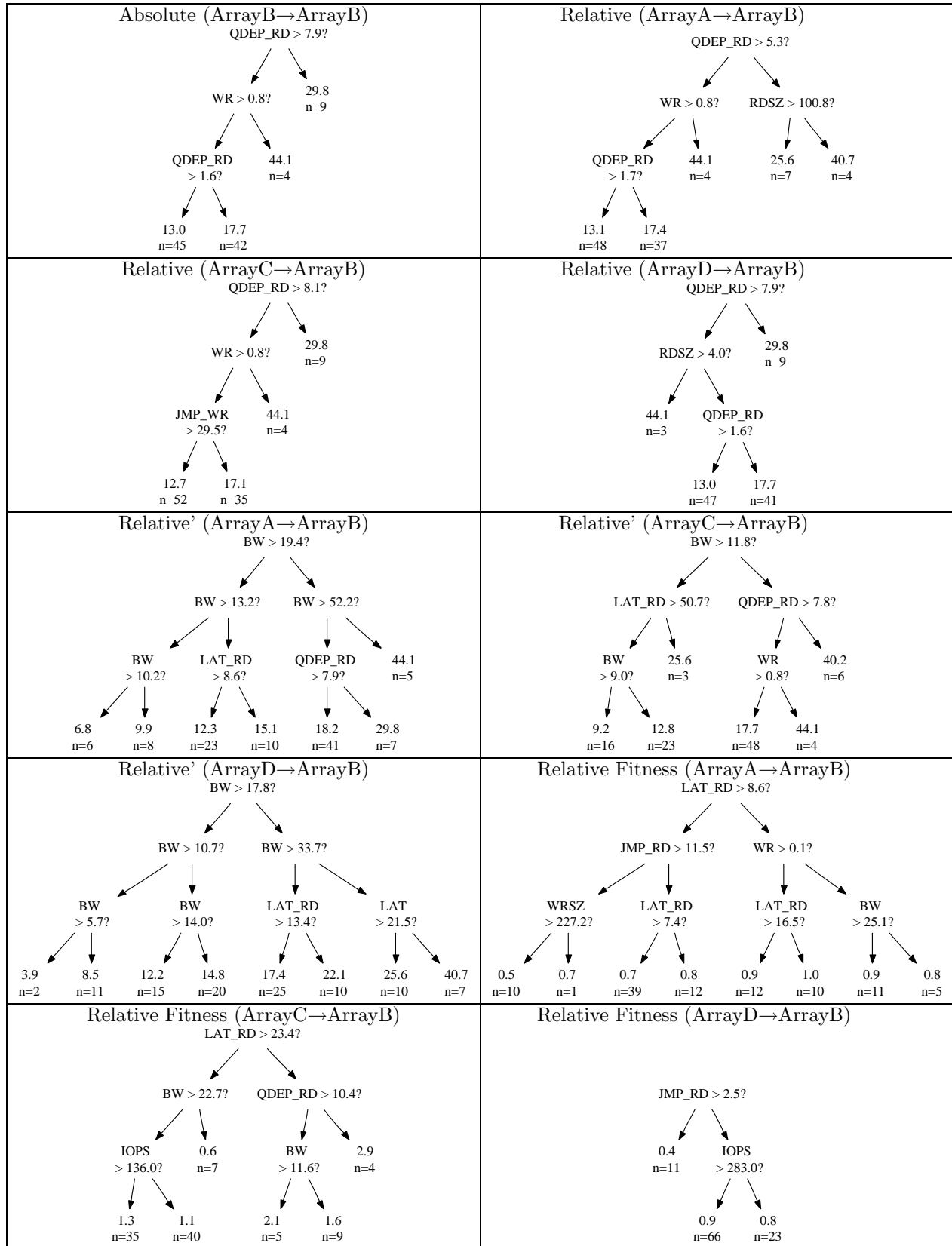


Table C.2: Bandwidth models of ArrayB.

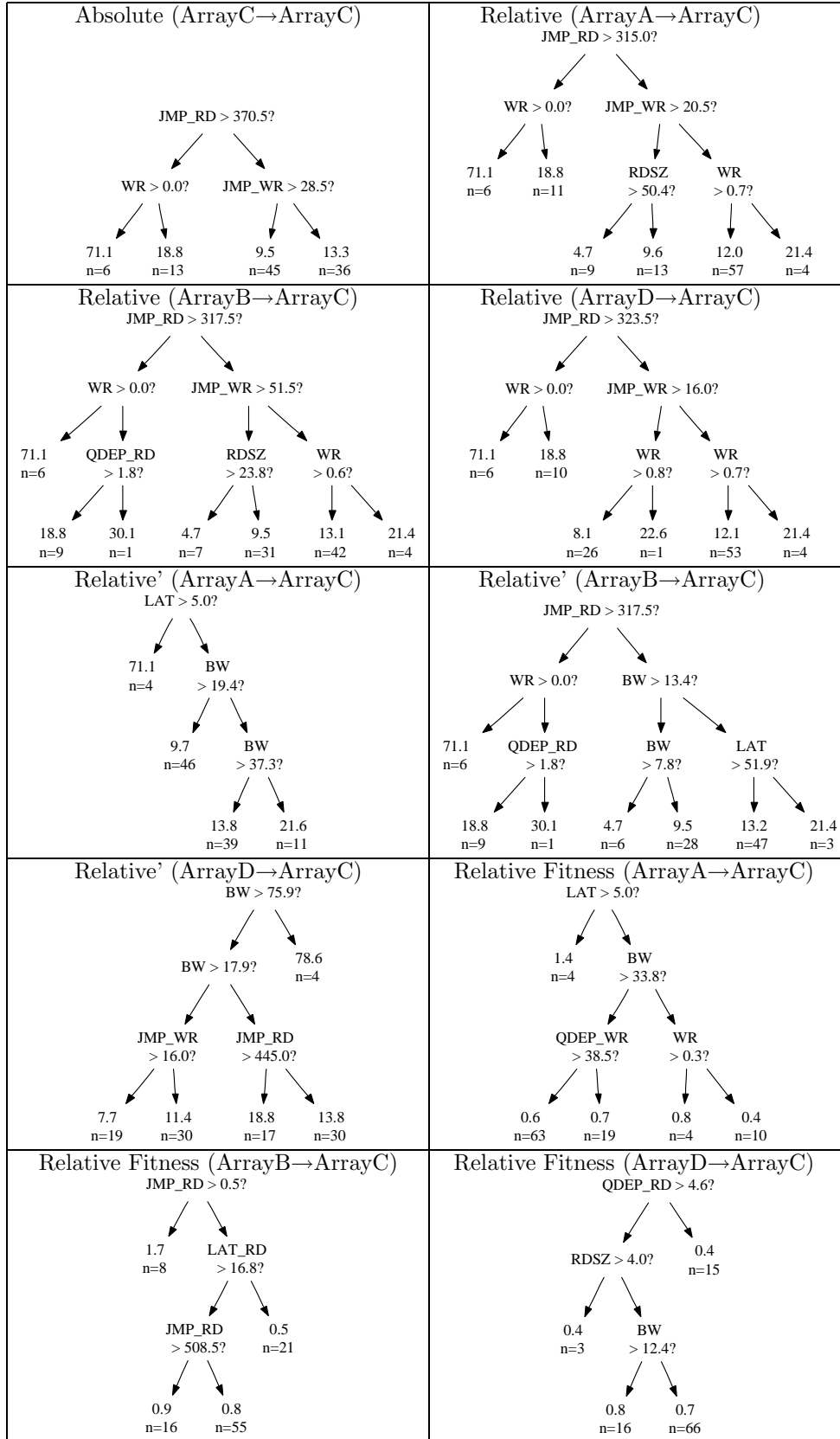


Table C.3: Bandwidth models of ArrayC.

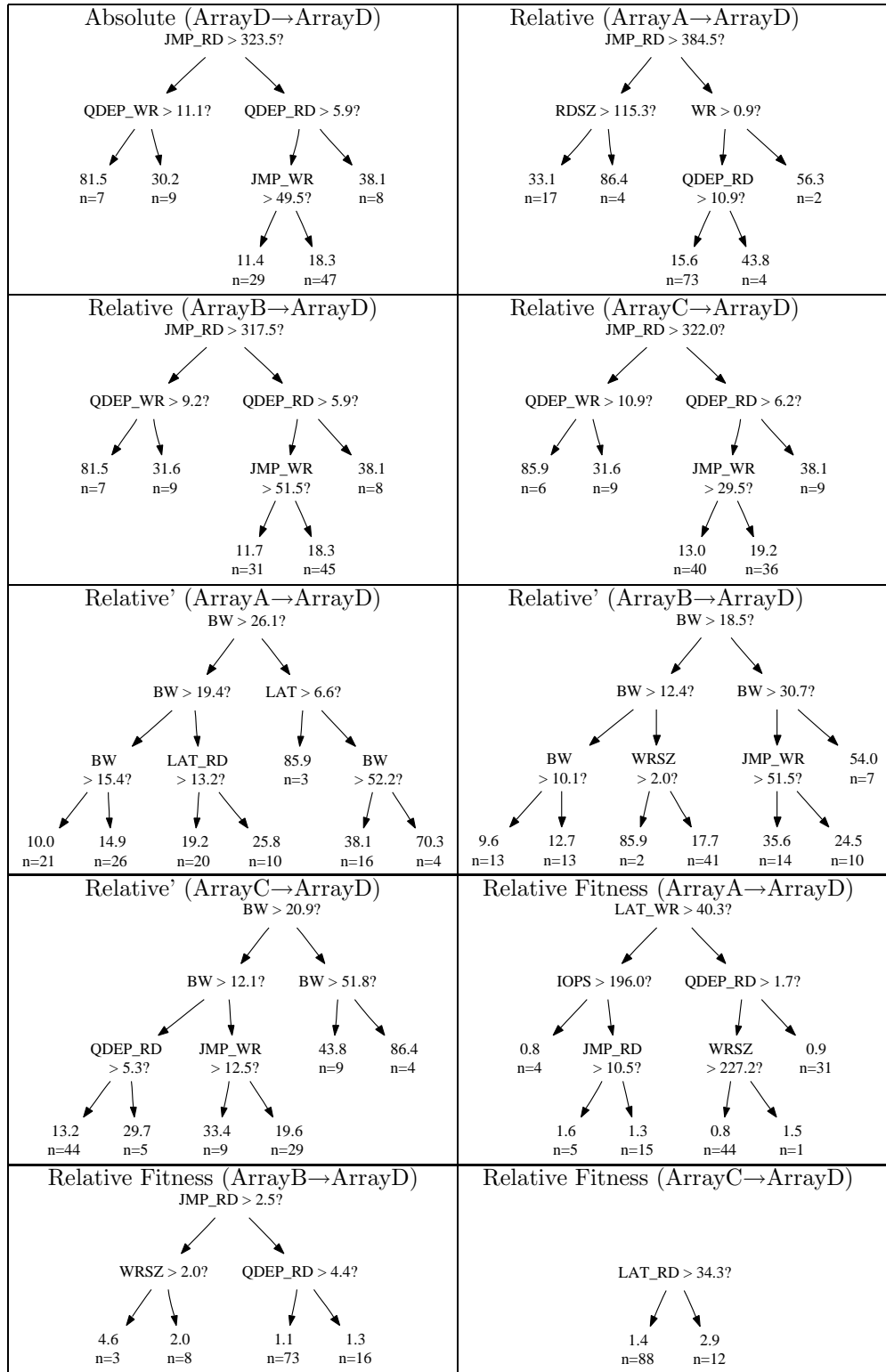


Table C.4: Bandwidth models of ArrayD.

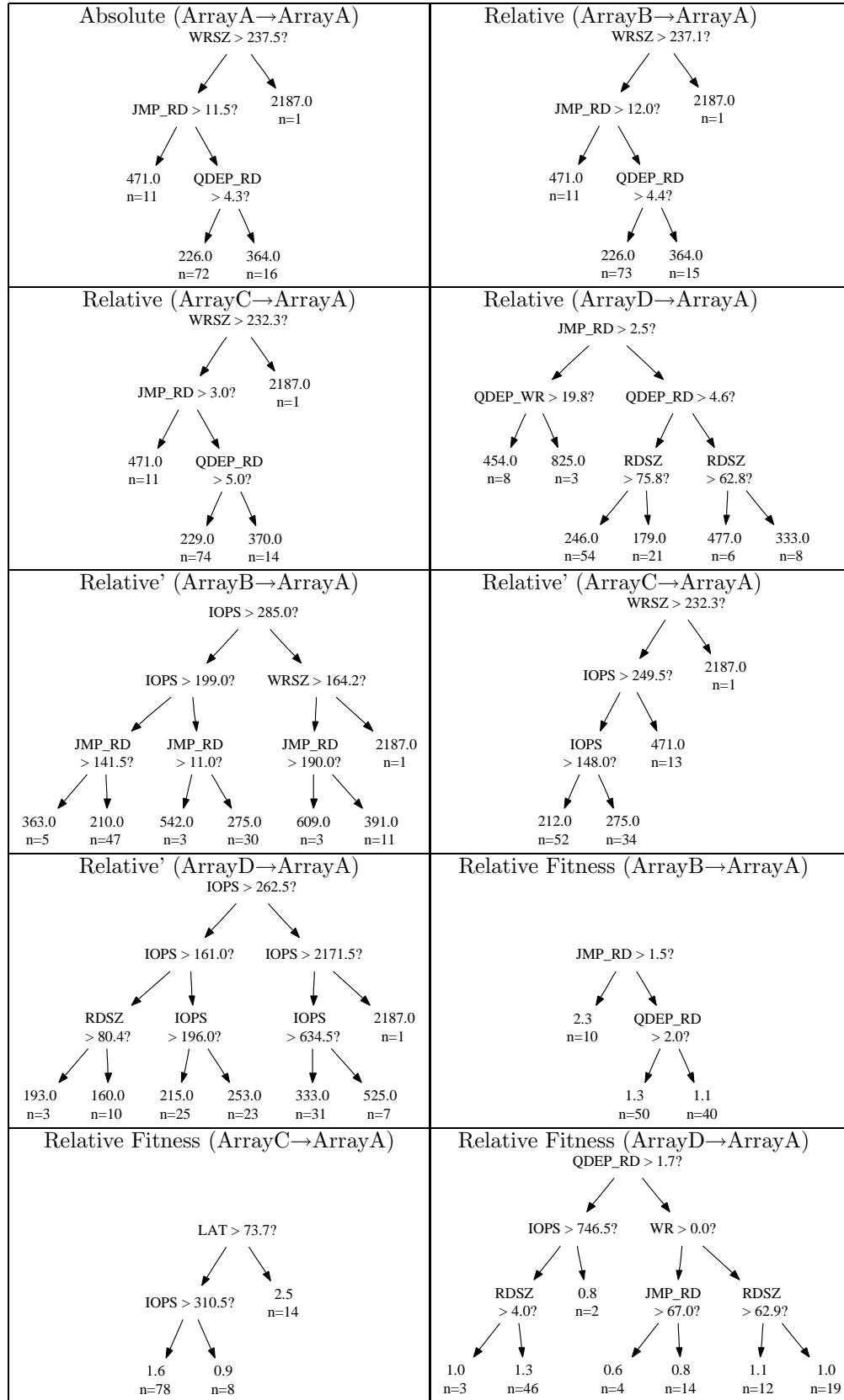


Table C.5: Throughput models of ArrayA.

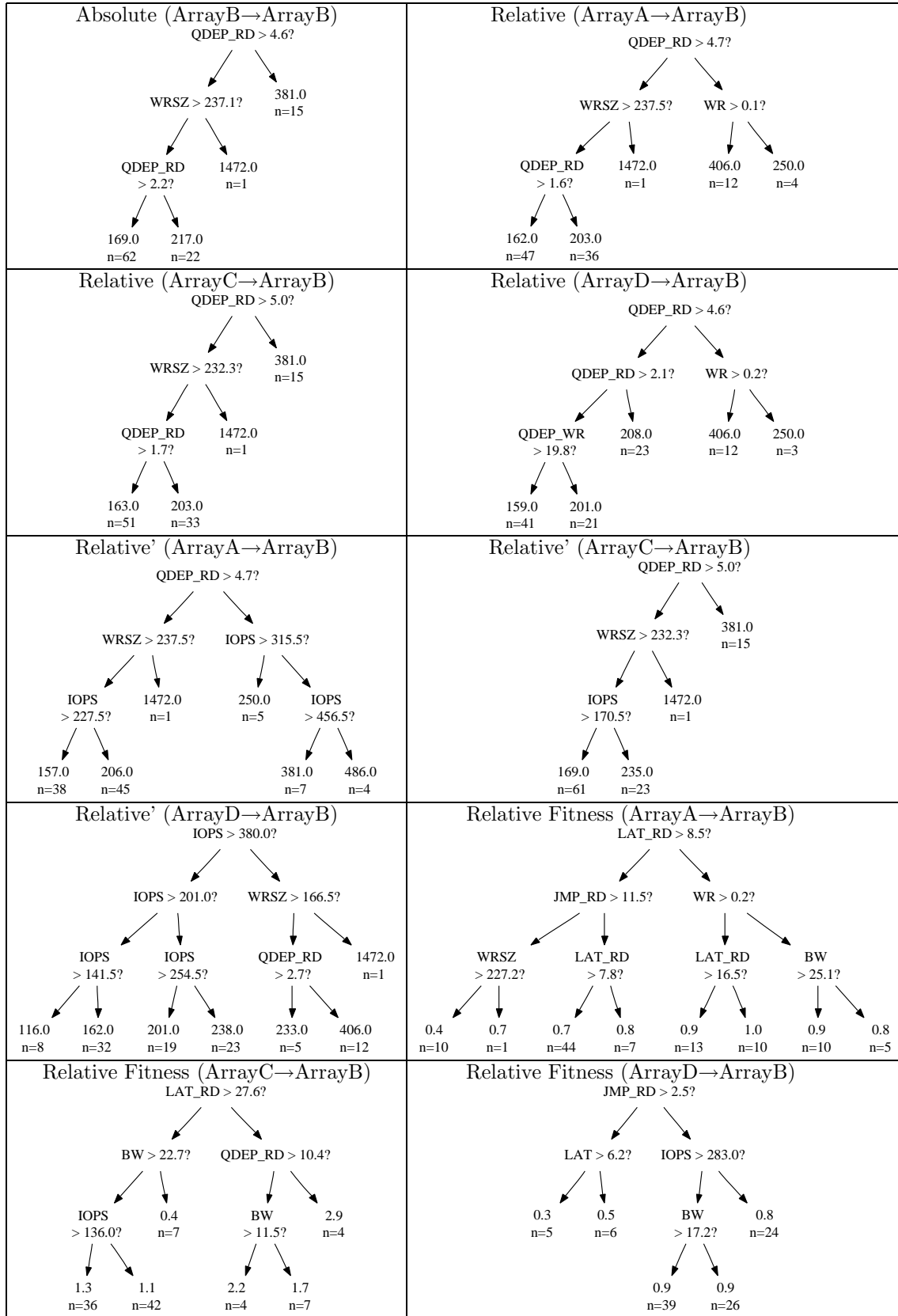


Table C.6: Throughput models of ArrayB.

<p>Absolute (ArrayC→ArrayC) WRSZ > 232.3?</p> <pre> graph TD A["WRSZ > 232.3?"] --> B["JMP_RD > 388.0?"] A --> C["2294.0 n=1"] B --> D["WRSZ > 10.8?"] B --> E["WRSZ > 164.1?"] D --> F["682.0 n=8"] D --> G["187.0 n=12"] E --> H["149.0 n=54"] E --> I["124.0 n=25"] </pre>	<p>Relative (ArrayA→ArrayC) WRSZ > 237.5?</p> <pre> graph TD A["WRSZ > 237.5?"] --> B["JMP_RD > 1.5?"] A --> C["2294.0 n=1"] B --> D["424.0 n=9"] B --> E["JMP_RD > 422.5?"] E --> F["187.0 n=16"] E --> G["132.0 n=74"] </pre>
<p>Relative (ArrayB→ArrayC) WRSZ > 237.1?</p> <pre> graph TD A["WRSZ > 237.1?"] --> B["JMP_RD > 382.5?"] A --> C["2294.0 n=1"] B --> D["WR > 0.1?"] B --> E["135.0 n=80"] D --> F["682.0 n=8"] D --> G["187.0 n=11"] </pre>	<p>Relative (ArrayD→ArrayC)</p> <pre> graph TD A["JMP_RD > 2.5?"] --> B["WR > 0.4?"] A --> C["JMP_RD > 419.5?"] B --> D["691.0 n=7"] B --> E["169.0 n=4"] C --> F["187.0 n=14"] C --> G["132.0 n=75"] </pre>
<p>Relative' (ArrayA→ArrayC) WRSZ > 237.5?</p> <pre> graph TD A["WRSZ > 237.5?"] --> B["LAT > 5.8?"] A --> C["2294.0 n=1"] B --> D["682.0 n=3"] B --> E["IOPS > 264.5?"] E --> F["128.0 n=55"] E --> G["187.0 n=41"] </pre>	<p>Relative' (ArrayB→ArrayC) WRSZ > 237.1?</p> <pre> graph TD A["WRSZ > 237.1?"] --> B["JMP_RD > 382.5?"] A --> C["2294.0 n=1"] B --> D["LAT > 12.0?"] B --> E["135.0 n=80"] D --> F["691.0 n=3"] D --> G["258.0 n=16"] </pre>
<p>Relative' (ArrayD→ArrayC) IOPS > 701.5?</p> <pre> graph TD A["IOPS > 701.5?"] --> B["IOPS > 196.0?"] A --> C["744.0 n=6"] B --> D["IOPS > 147.5?"] B --> E["LAT > 13.1?"] D --> F["88.0 n=9"] D --> G["128.0 n=29"] E --> H["229.0 n=23"] E --> I["149.0 n=33"] </pre>	<p>Relative Fitness (ArrayA→ArrayC)</p> <pre> graph TD A["LAT > 5.8?"] --> B["1.4 n=4"] A --> C["BW > 33.8?"] C --> D["0.6 n=82"] C --> E["0.4 n=14"] </pre>
<p>Relative Fitness (ArrayB→ArrayC) RDSZ > 197.8?</p> <pre> graph TD A["RDSZ > 197.8?"] --> B["LAT_RD > 16.5?"] A --> C["6.5 n=1"] B --> D["JMP_RD > 403.0?"] B --> E["0.5 n=21"] D --> F["1.1 n=18"] D --> G["0.8 n=60"] </pre>	<p>Relative Fitness (ArrayD→ArrayC) QDEP_RD > 4.6?</p> <pre> graph TD A["QDEP_RD > 4.6?"] --> B["BW > 14.6?"] A --> C["0.4 n=15"] B --> D["QDEP_WR > 15.4?"] B --> E["RDSZ > 4.0?"] D --> F["0.7 n=11"] D --> G["0.9 n=17"] E --> H["0.4 n=3"] E --> I["0.7 n=54"] </pre>

Table C.7: Throughput models of ArrayC.

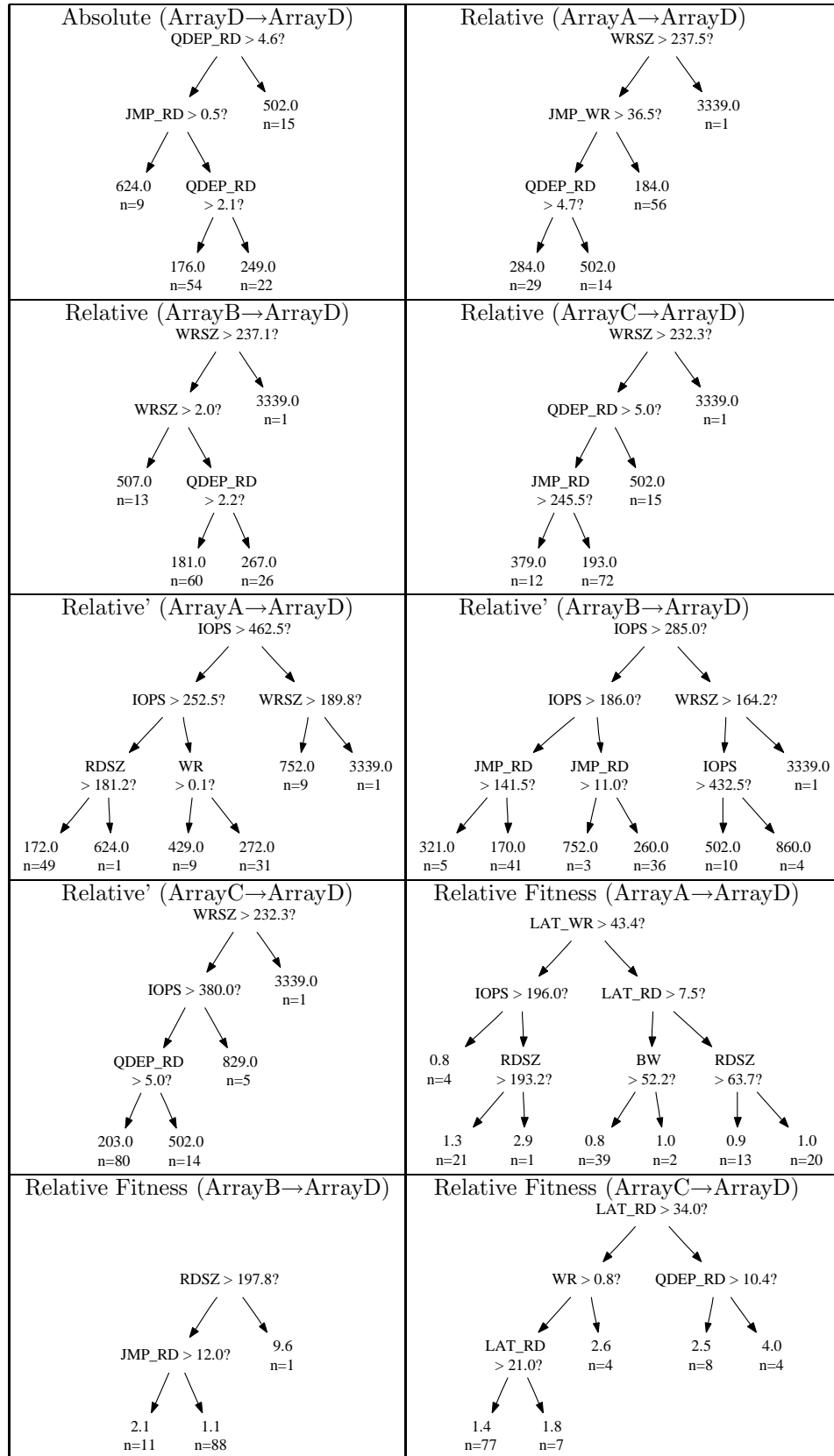


Table C.8: Throughput models of ArrayD.

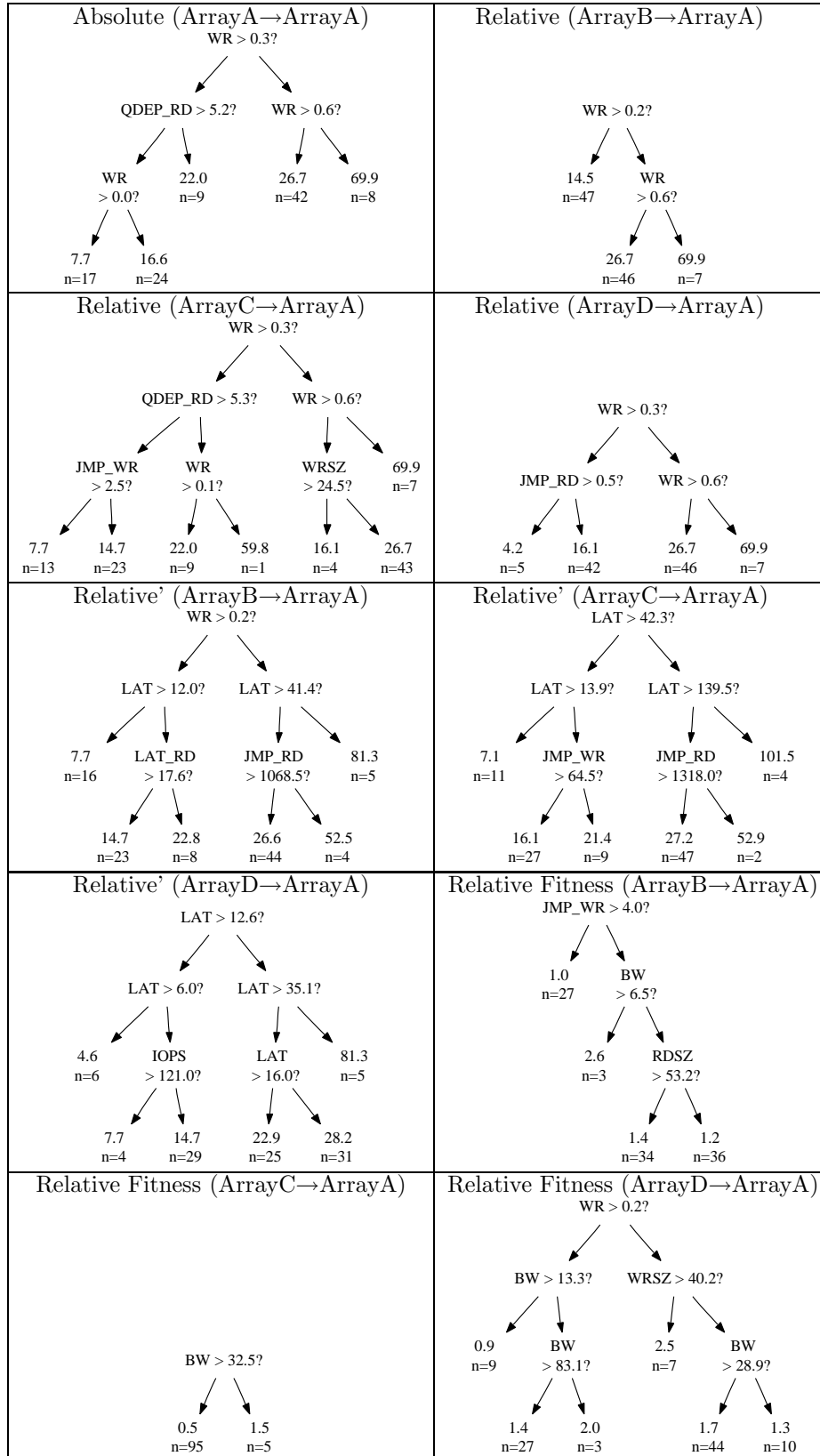


Table C.9: Latency models of ArrayA.

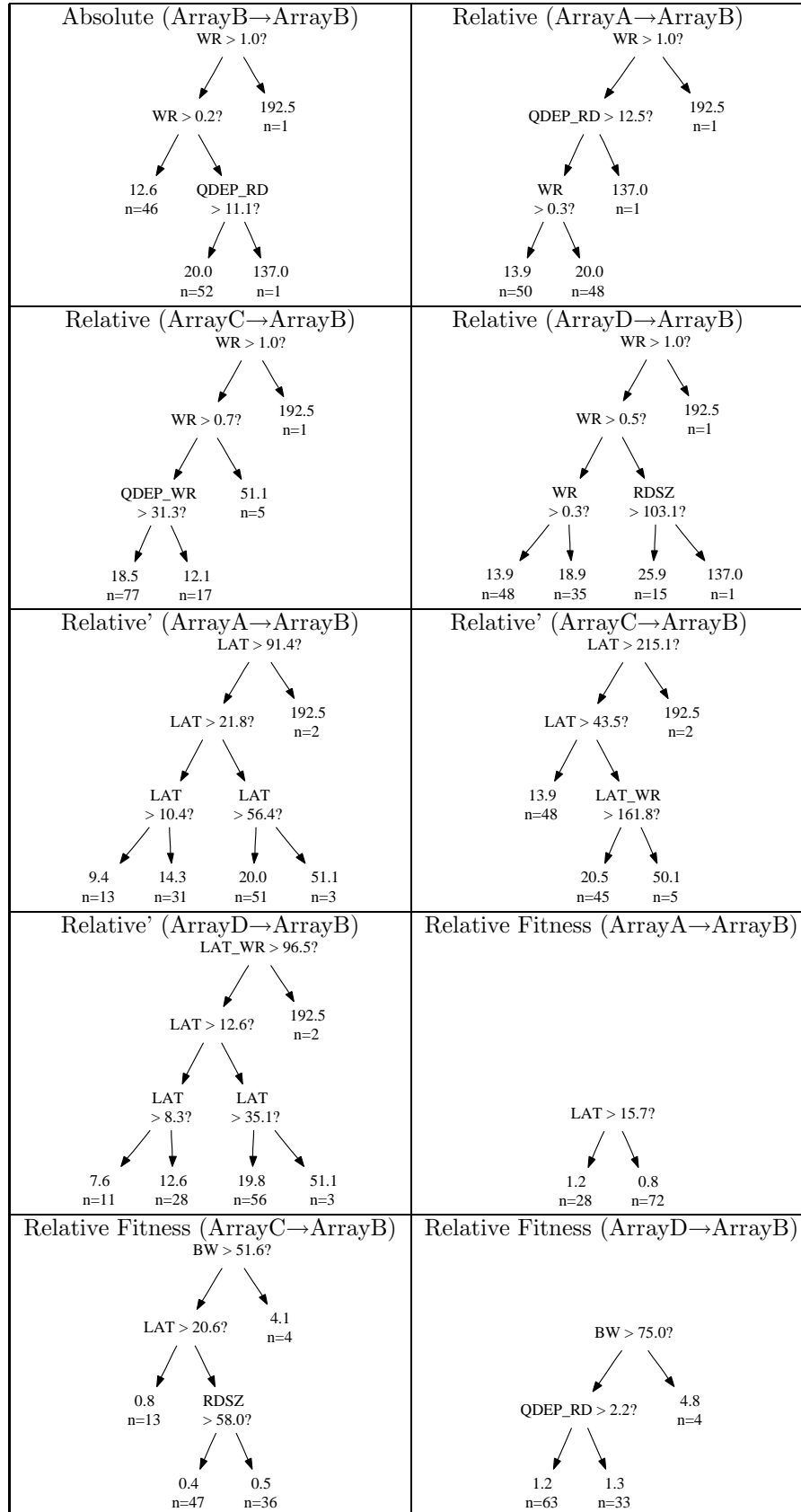


Table C.10: Latency models of ArrayB.

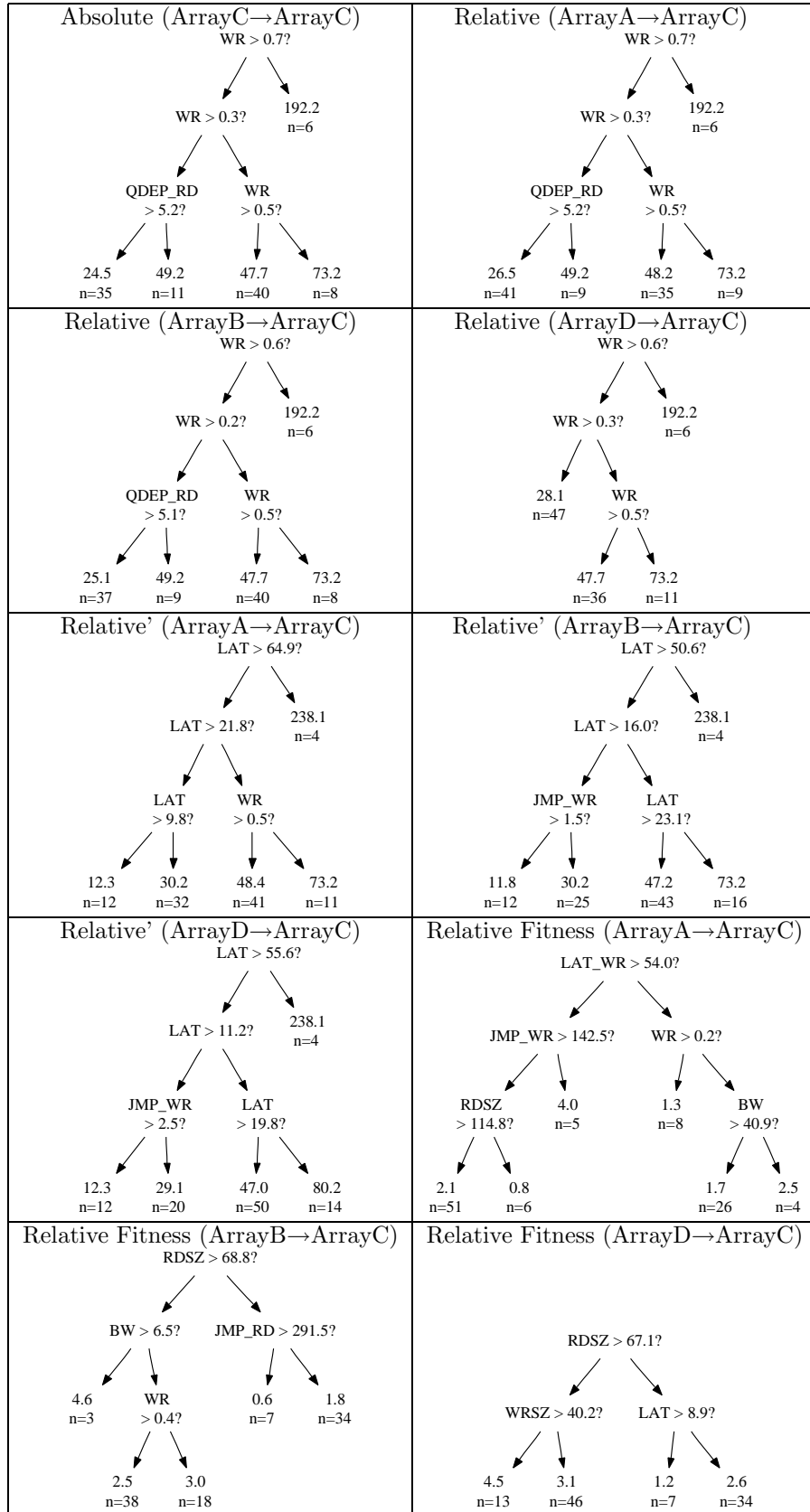


Table C.11: Latency models of ArrayC.

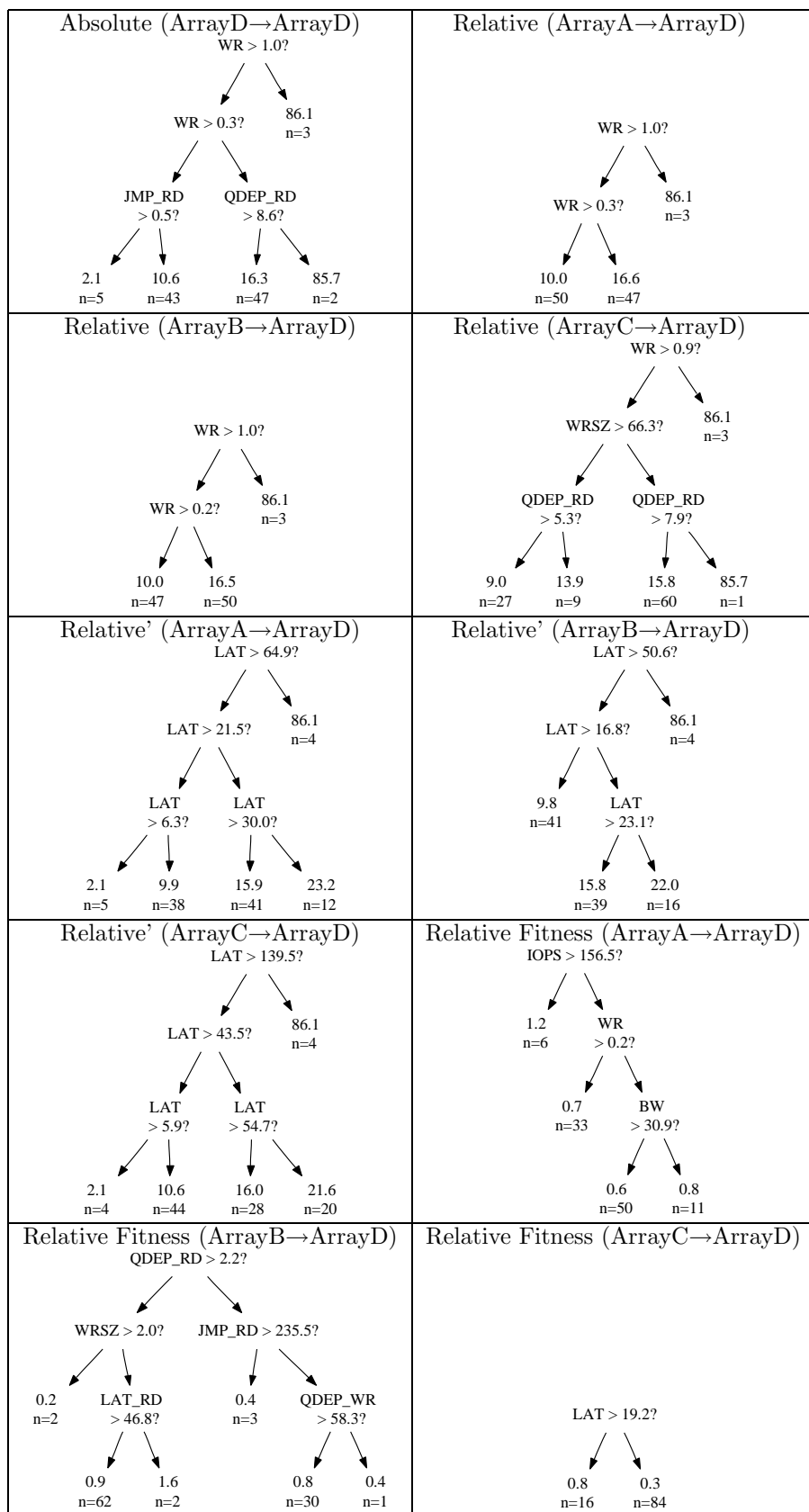


Table C.12: Latency models of ArrayD.

Appendix D

FitnessCache models

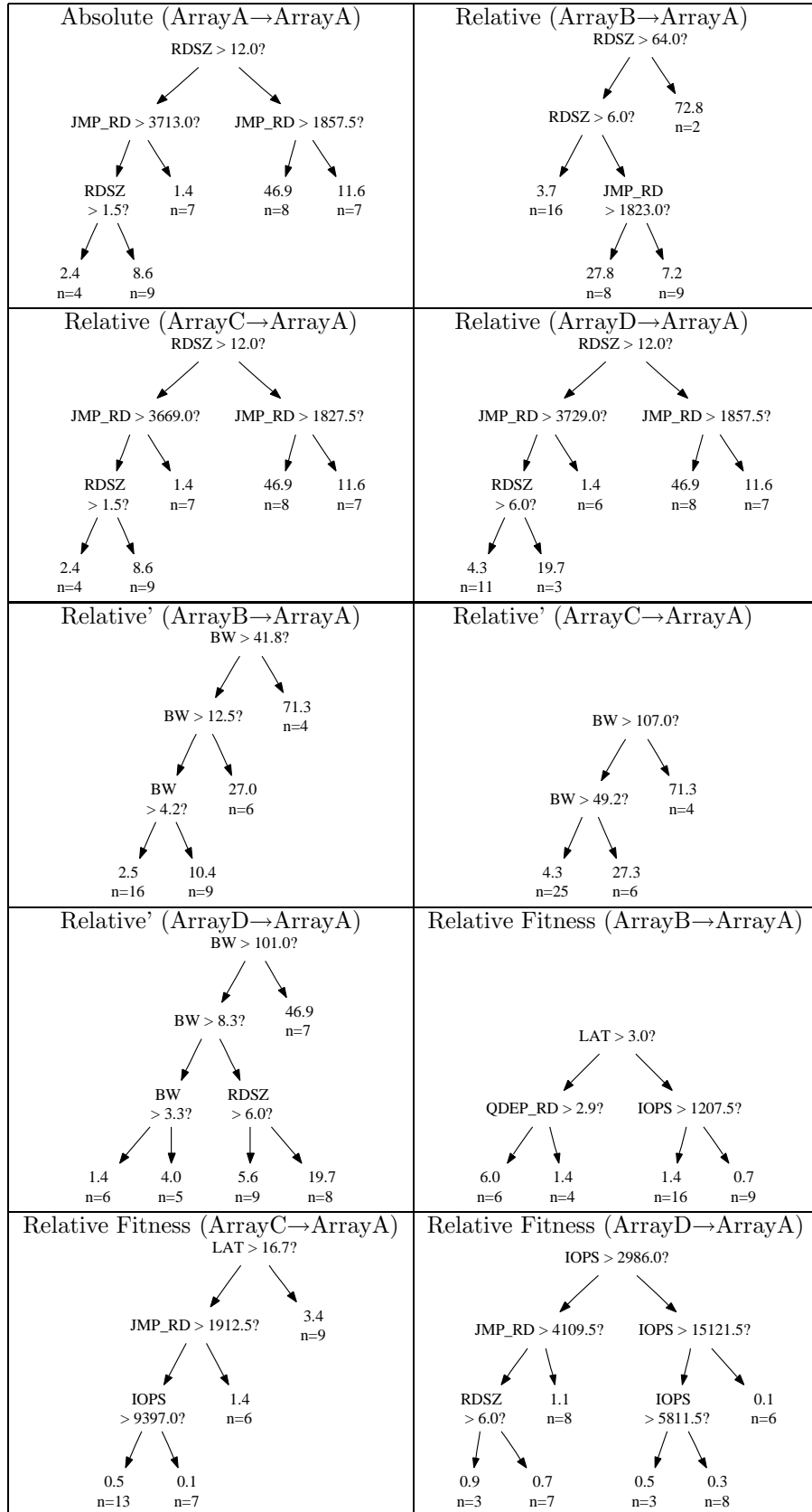


Table D.1: Bandwidth models of ArrayA.

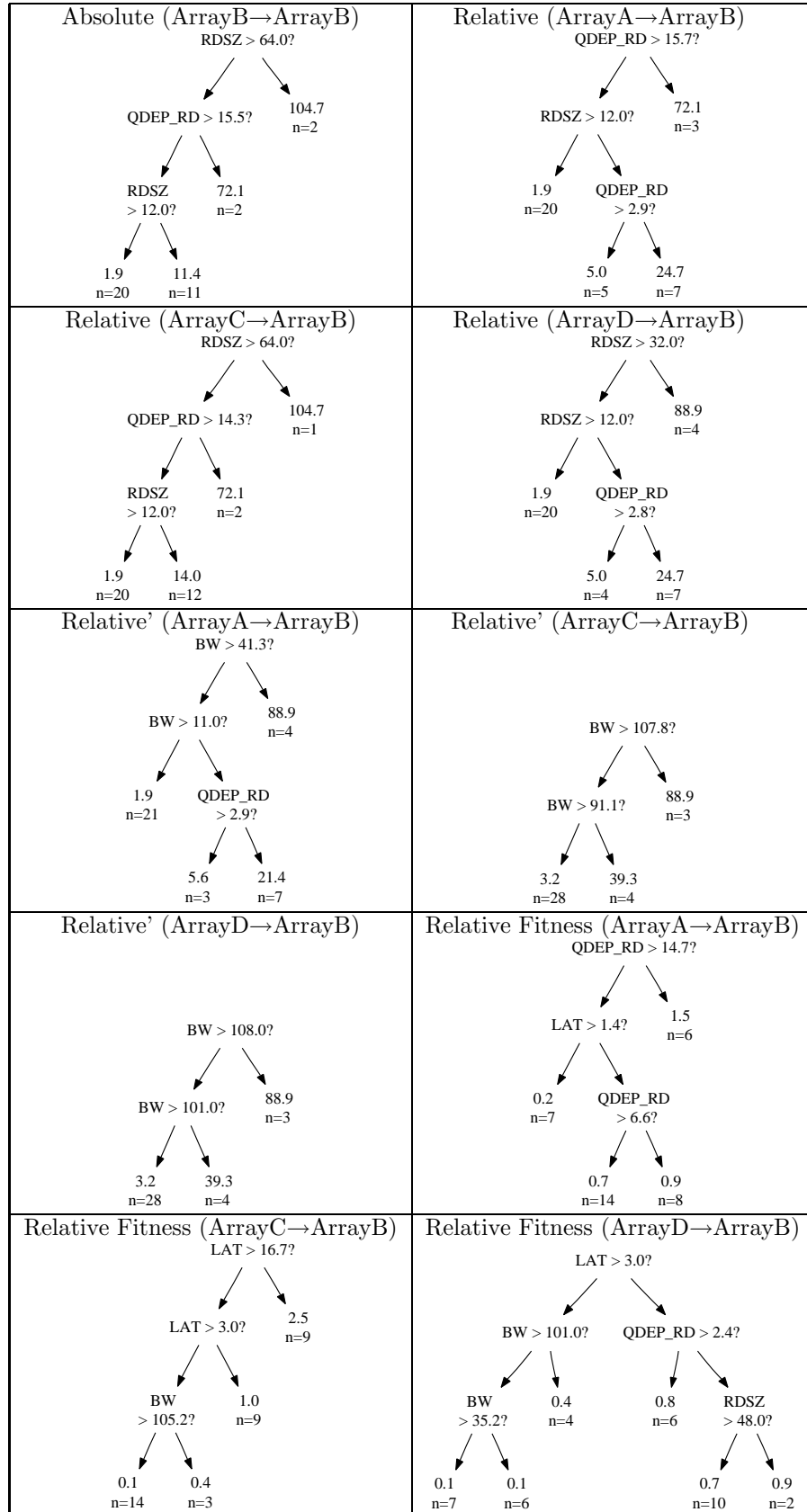


Table D.2: Bandwidth models of ArrayB.

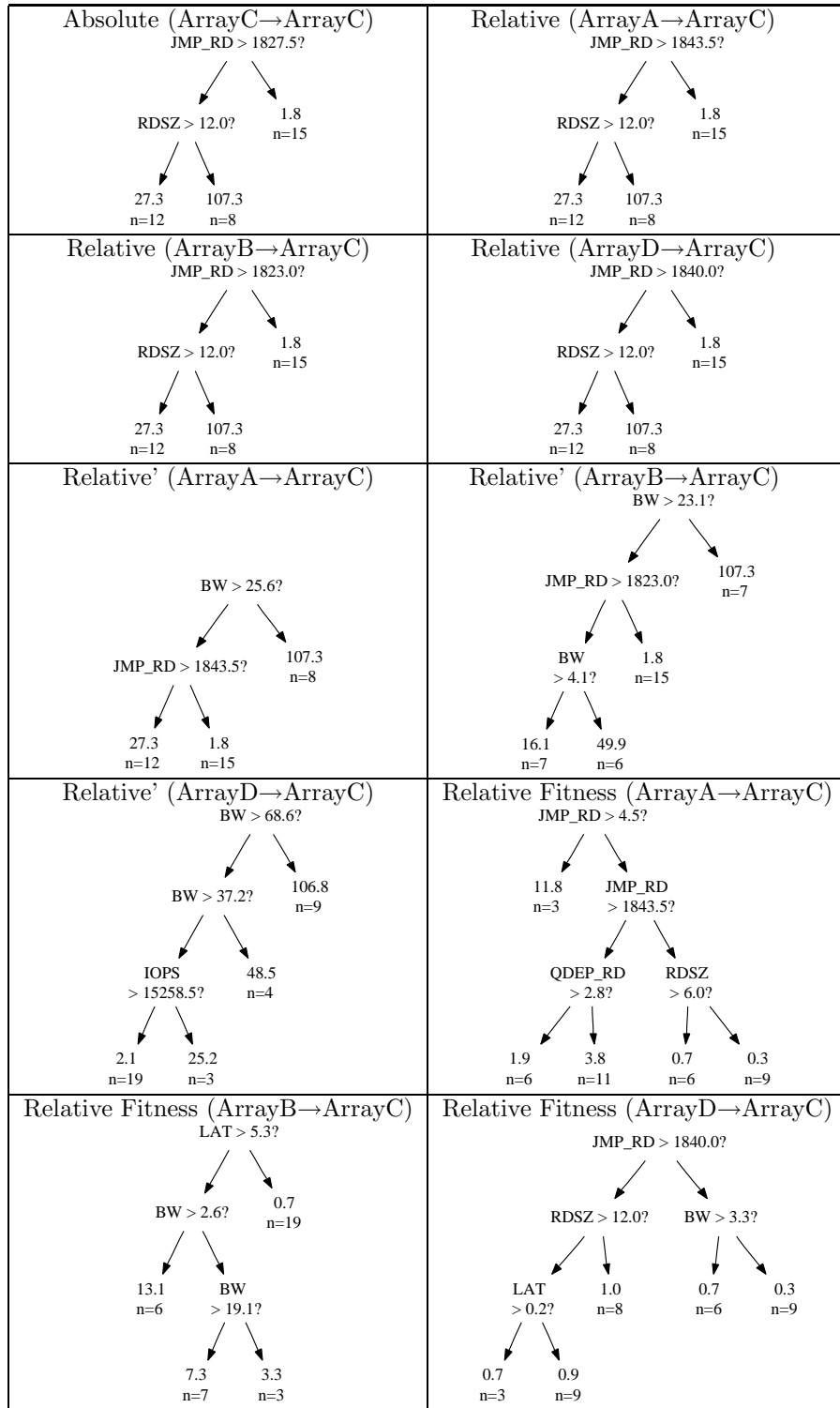


Table D.3: Bandwidth models of ArrayC.

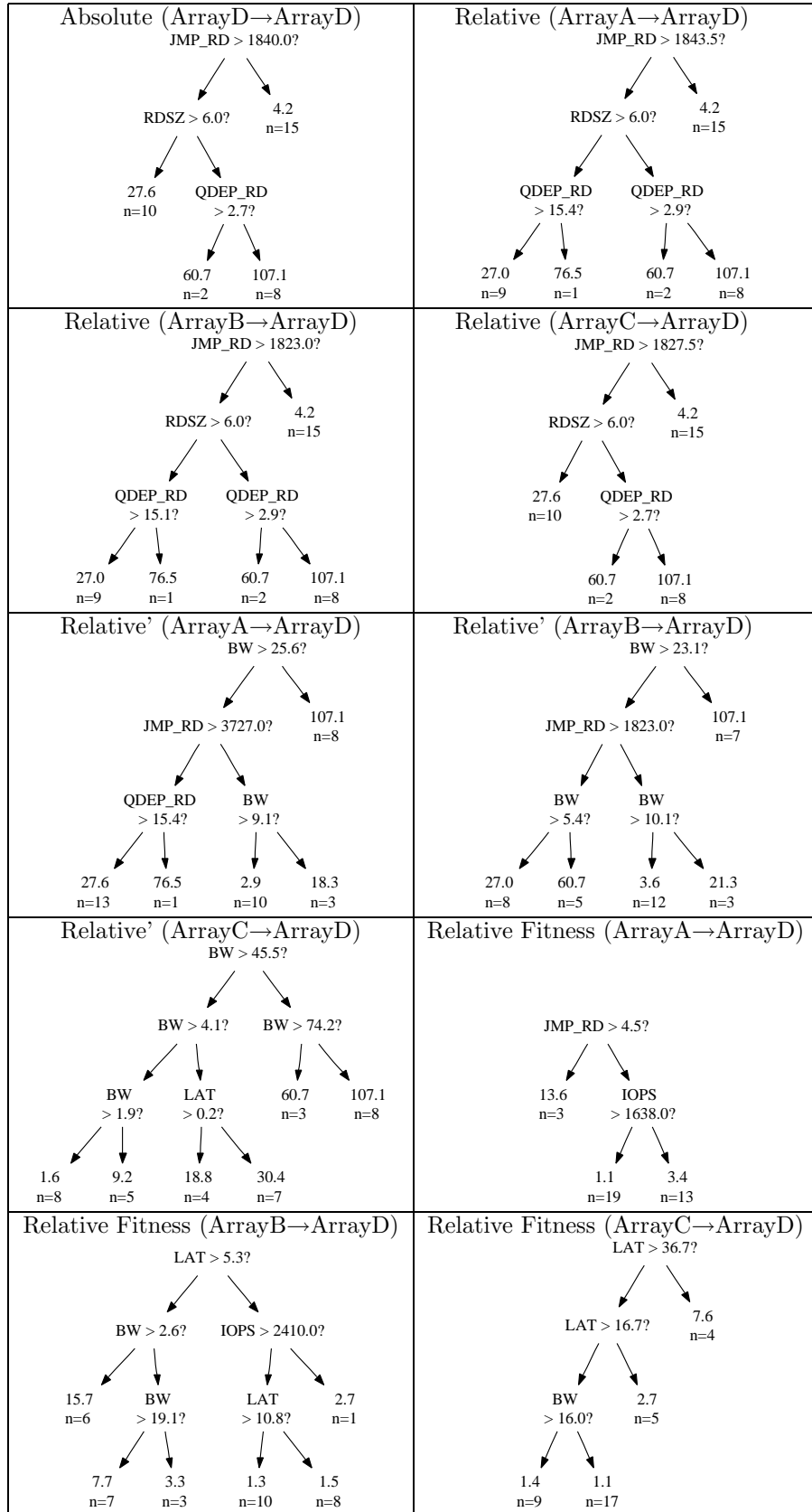


Table D.4: Bandwidth models of ArrayD.

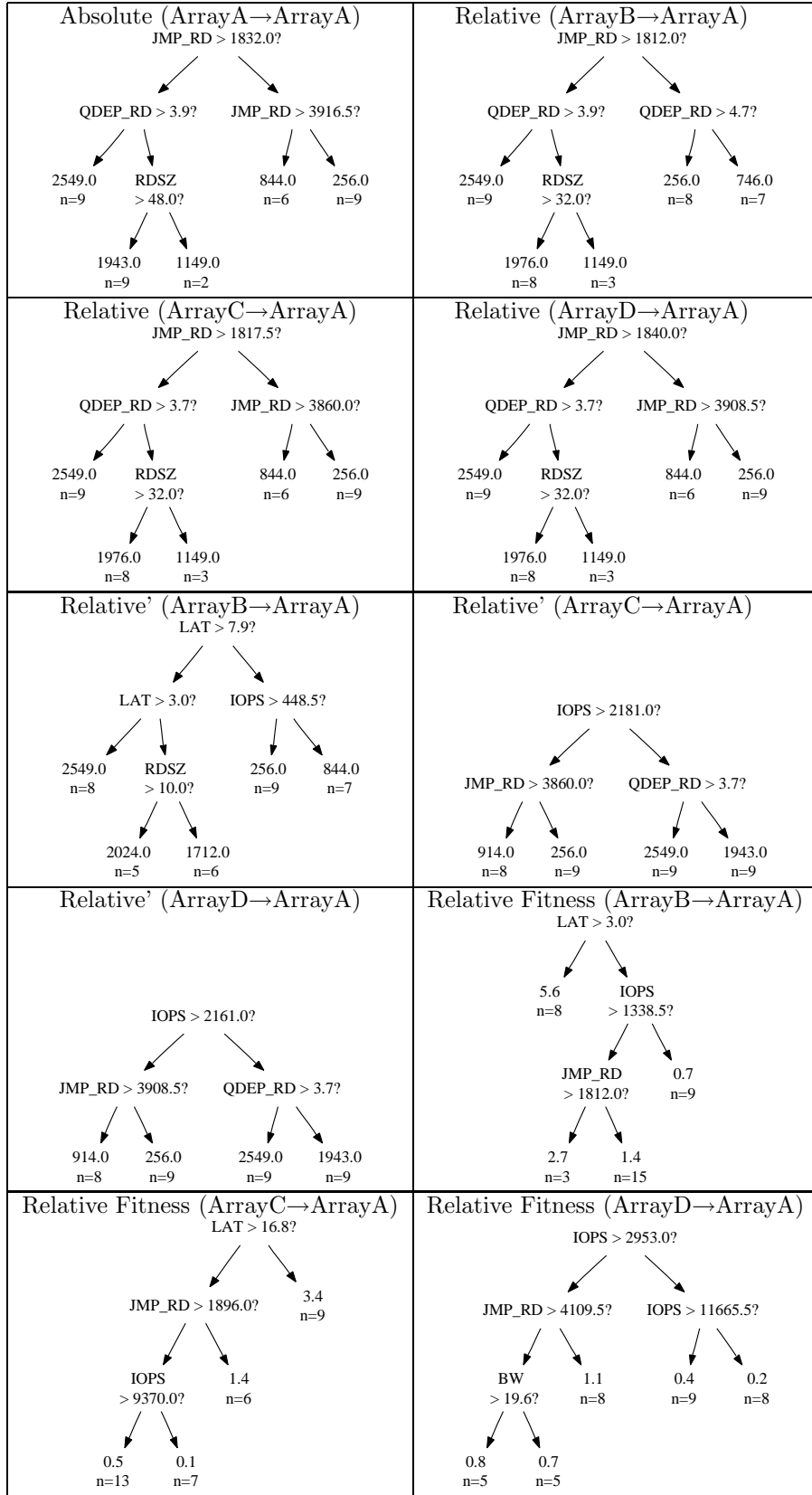


Table D.5: Throughput models of ArrayA.

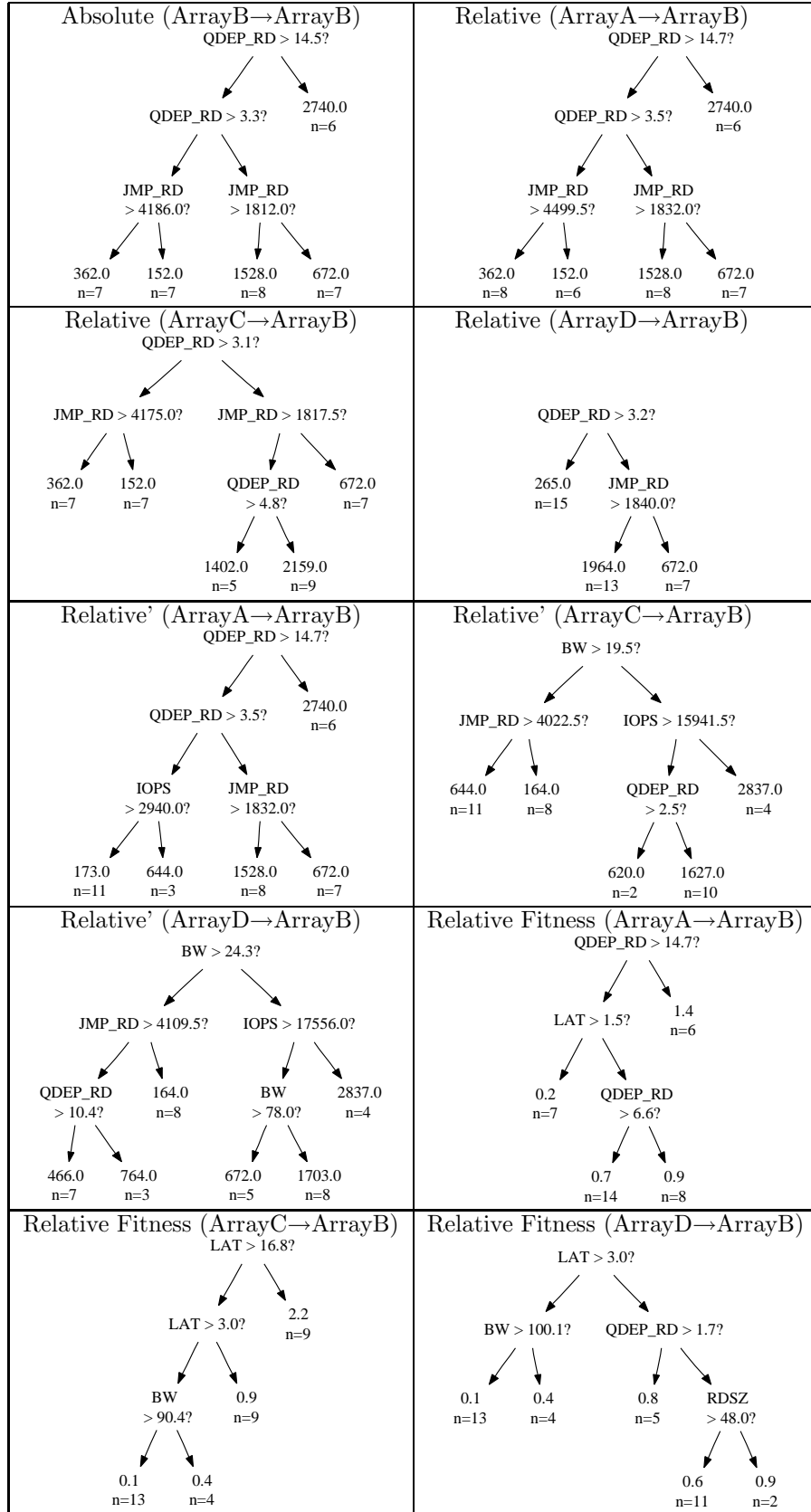


Table D.6: Throughput models of ArrayB.

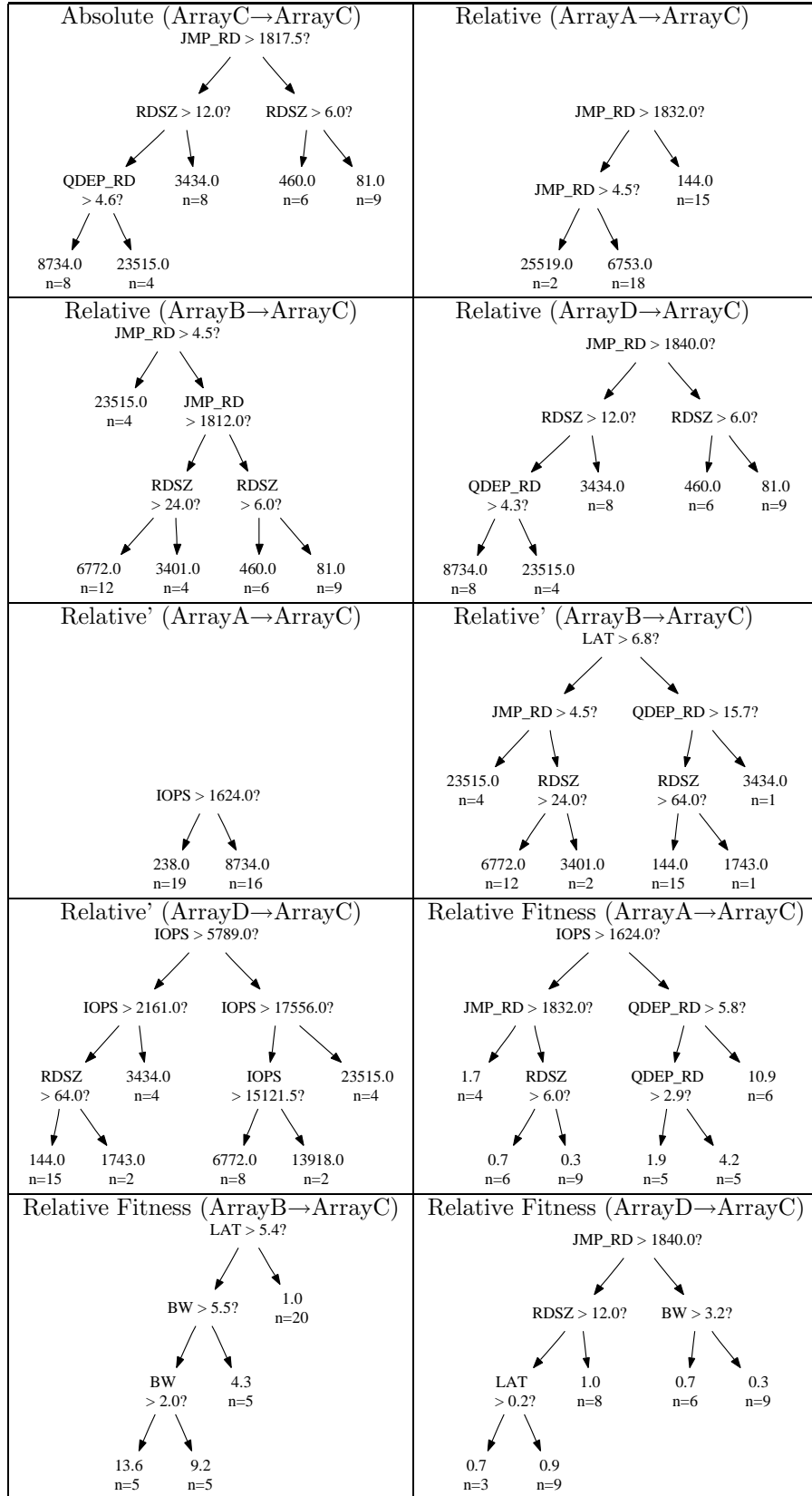


Table D.7: Throughput models of ArrayC.

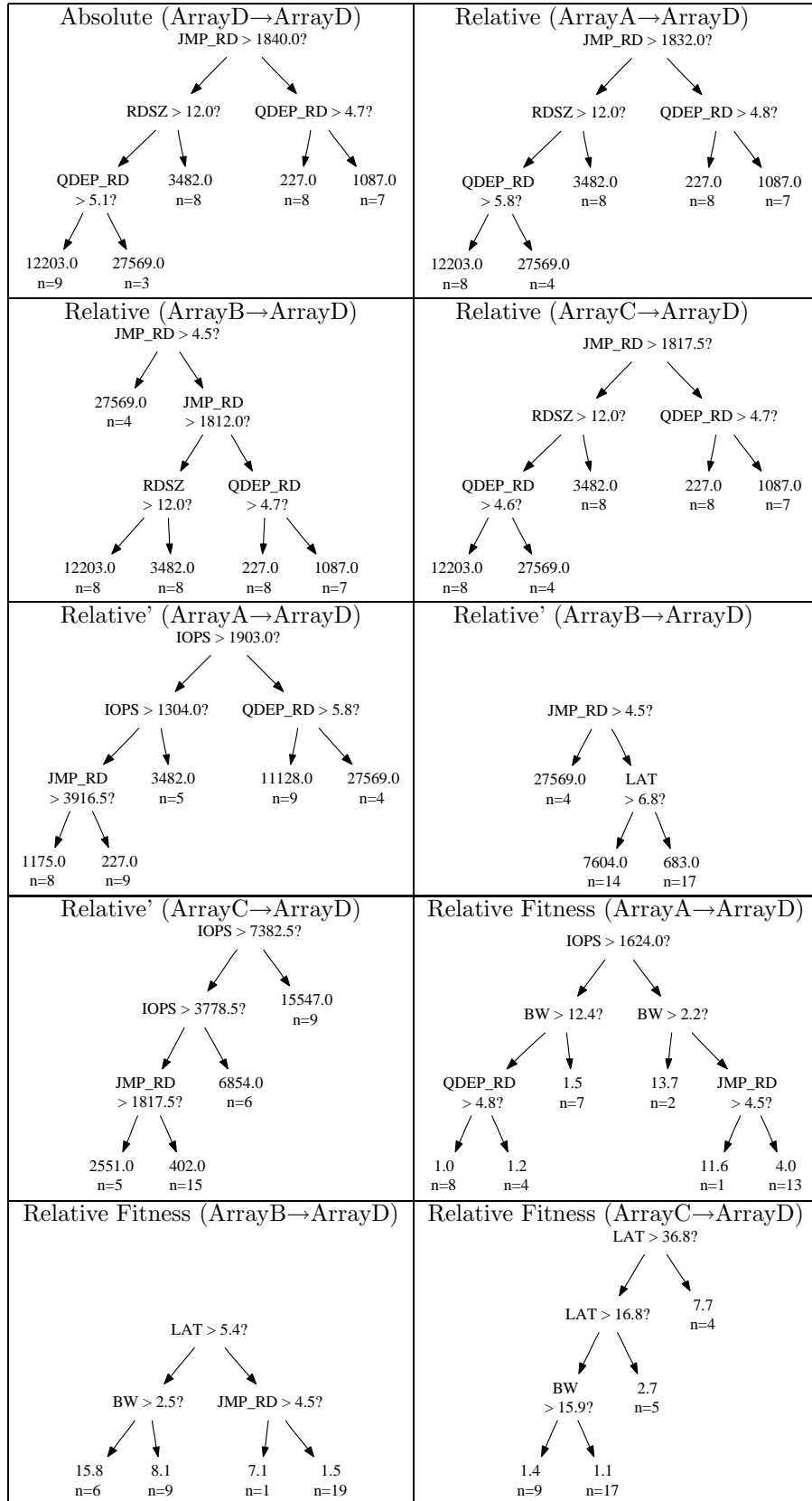


Table D.8: Throughput models of ArrayD.

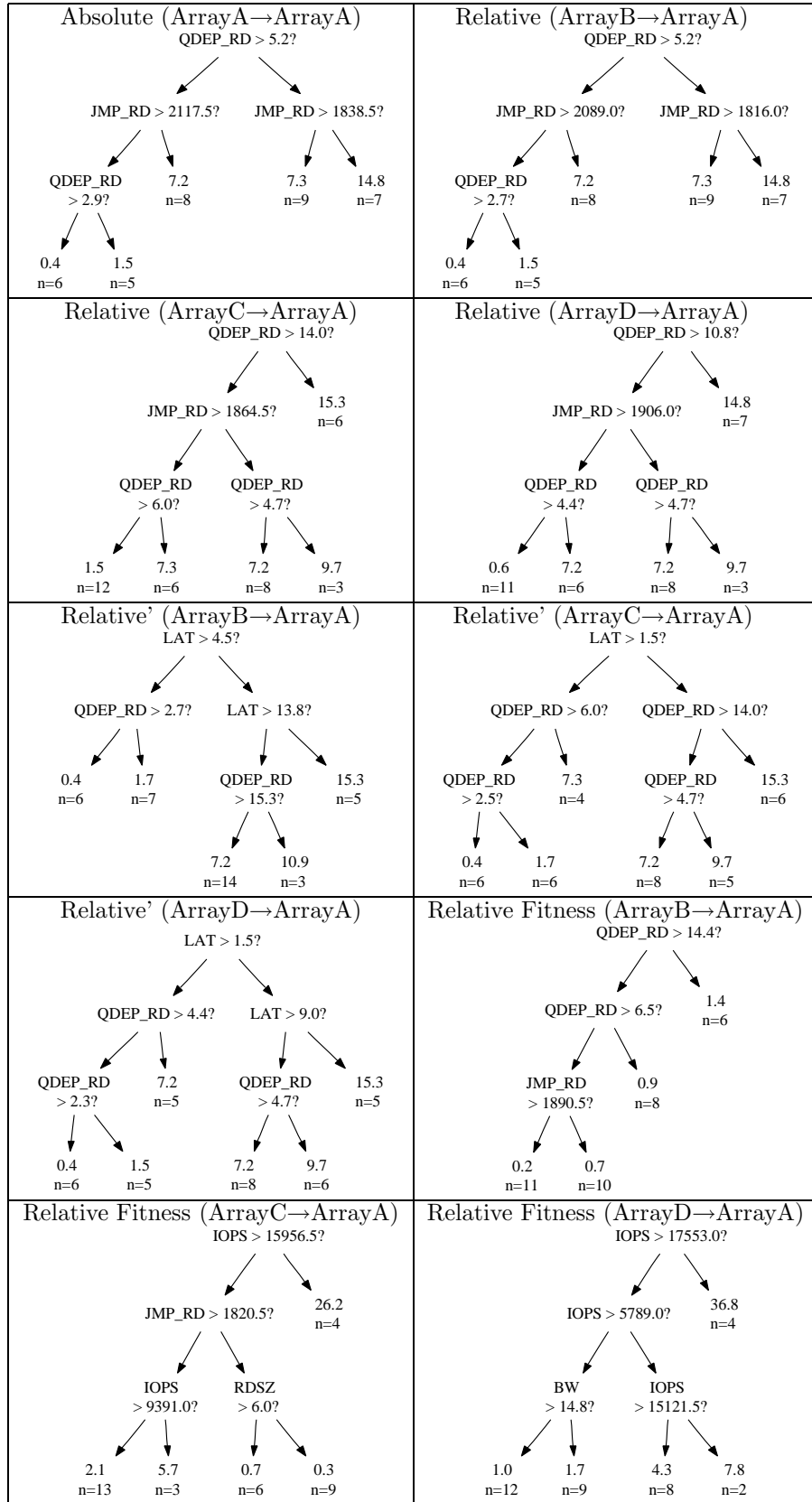


Table D.9: Latency models of ArrayA.

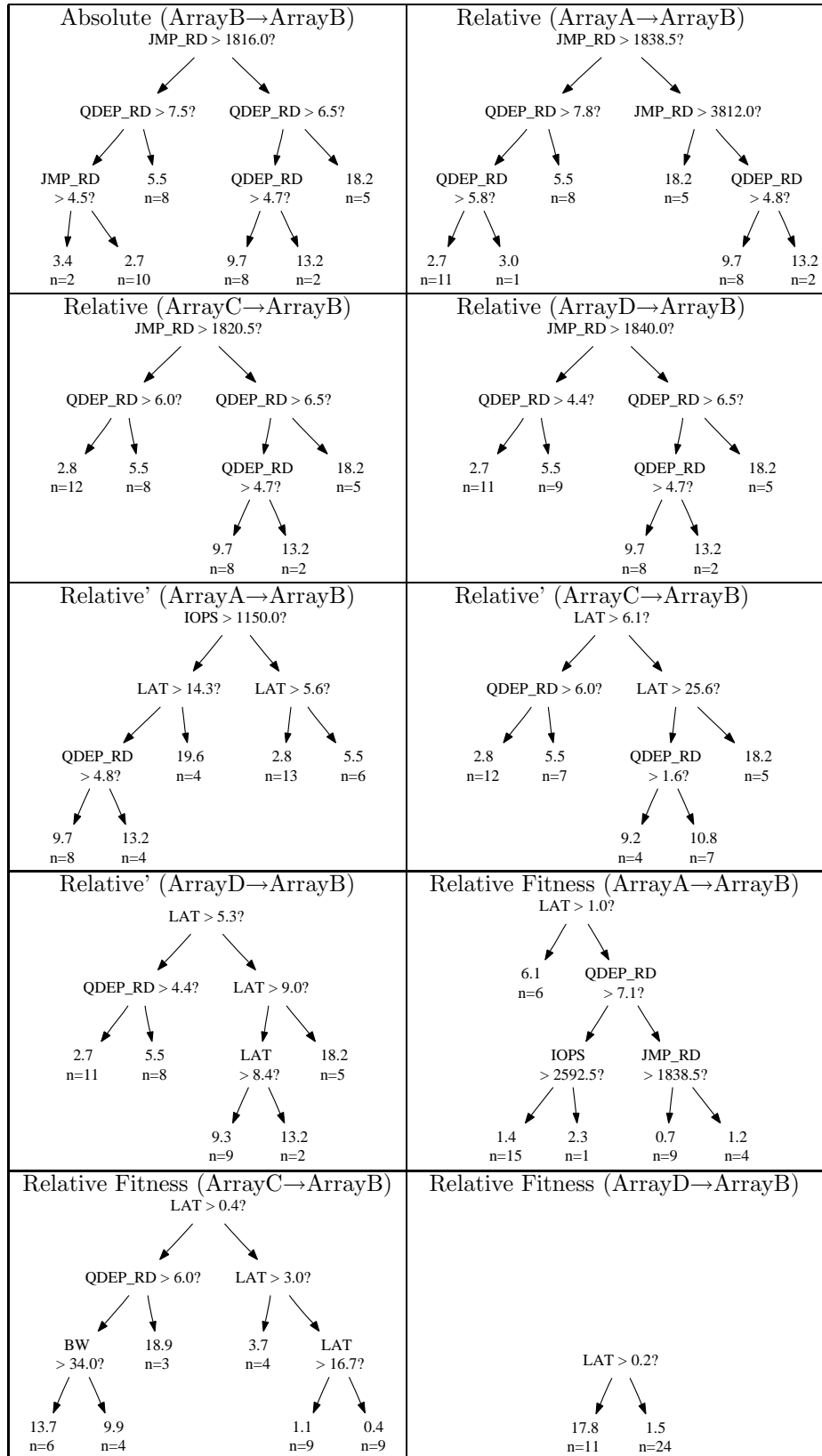


Table D.10: Latency models of ArrayB.

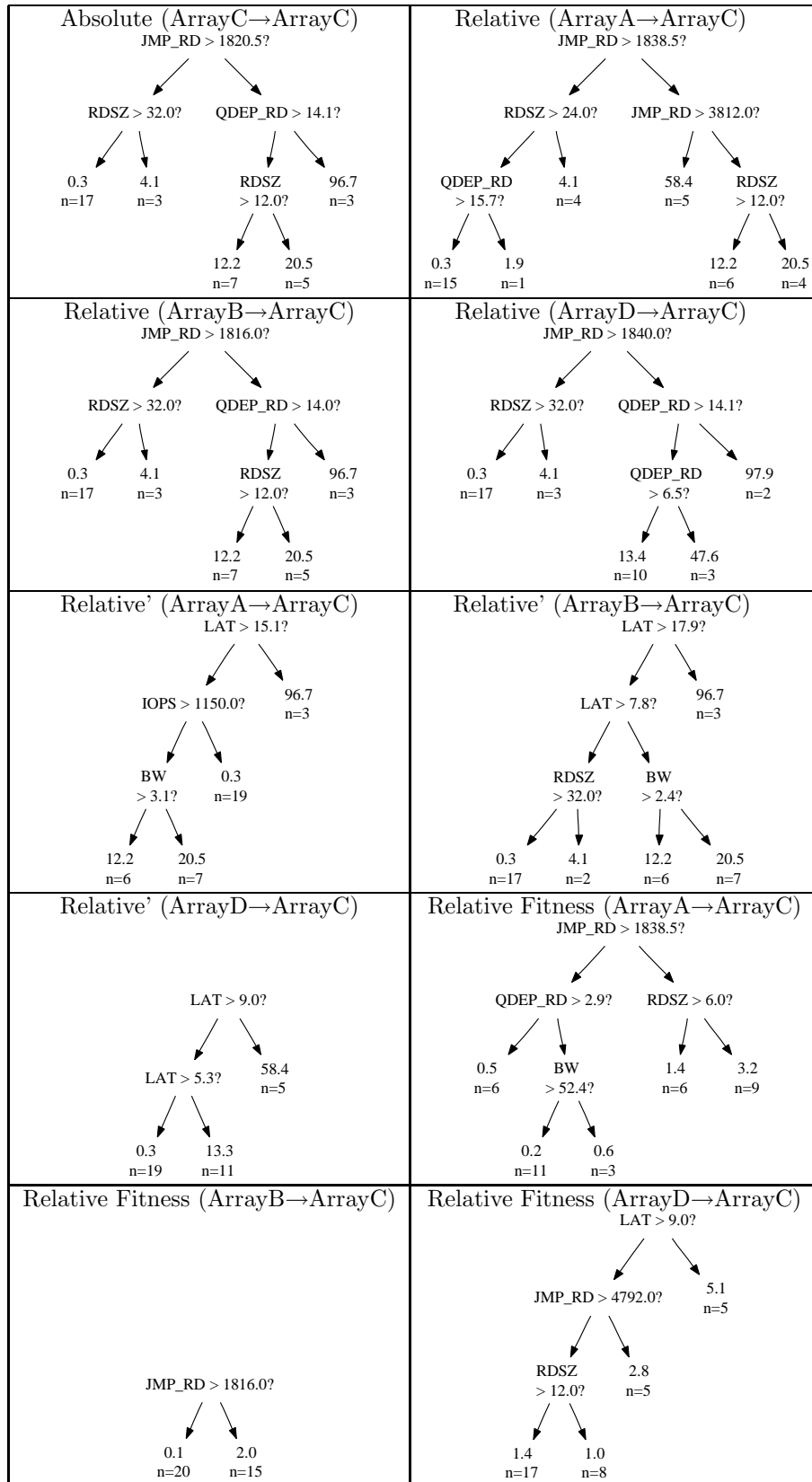


Table D.11: Latency models of ArrayC.

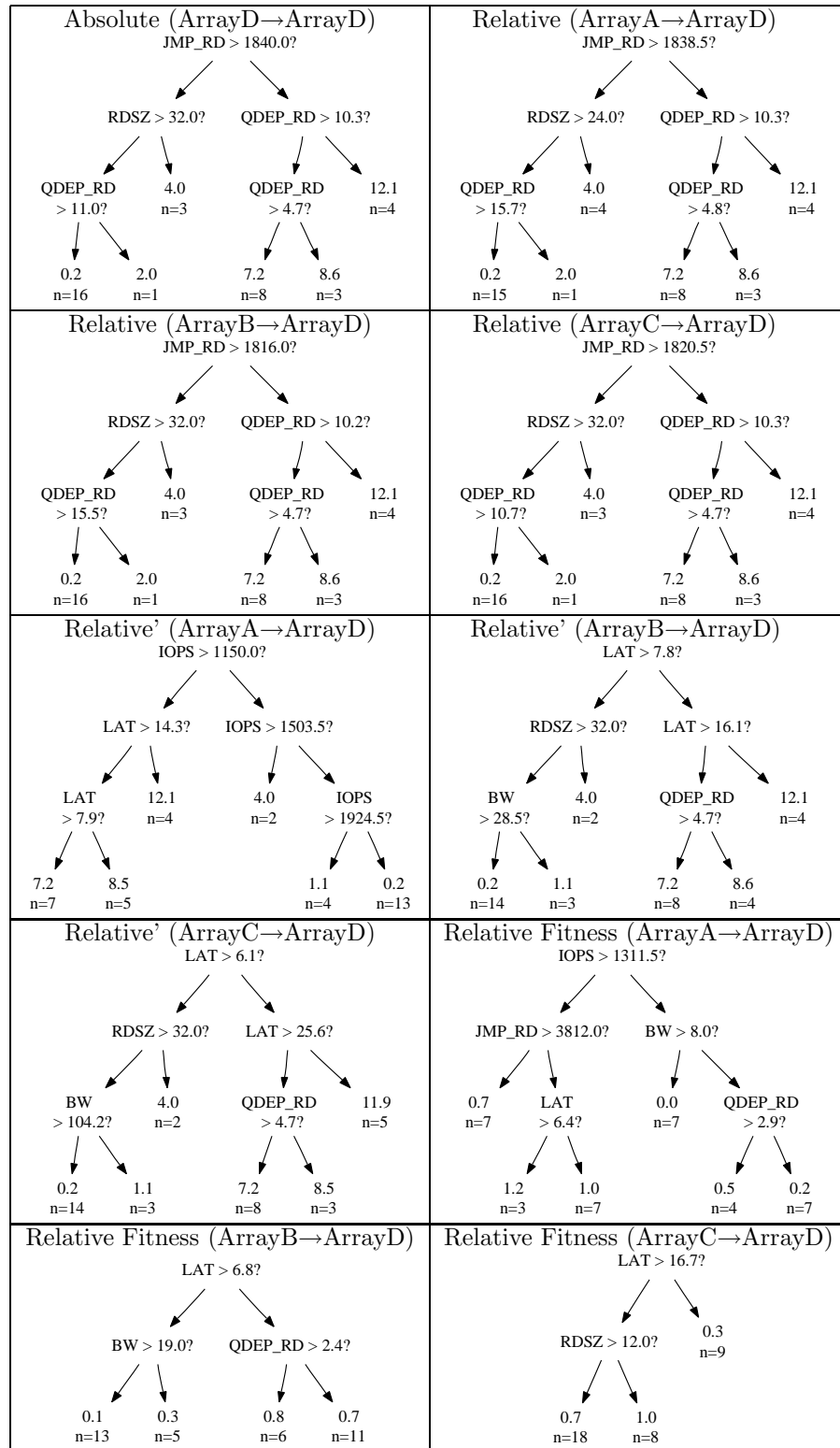


Table D.12: Latency models of ArrayD.

Appendix E

Postmark models

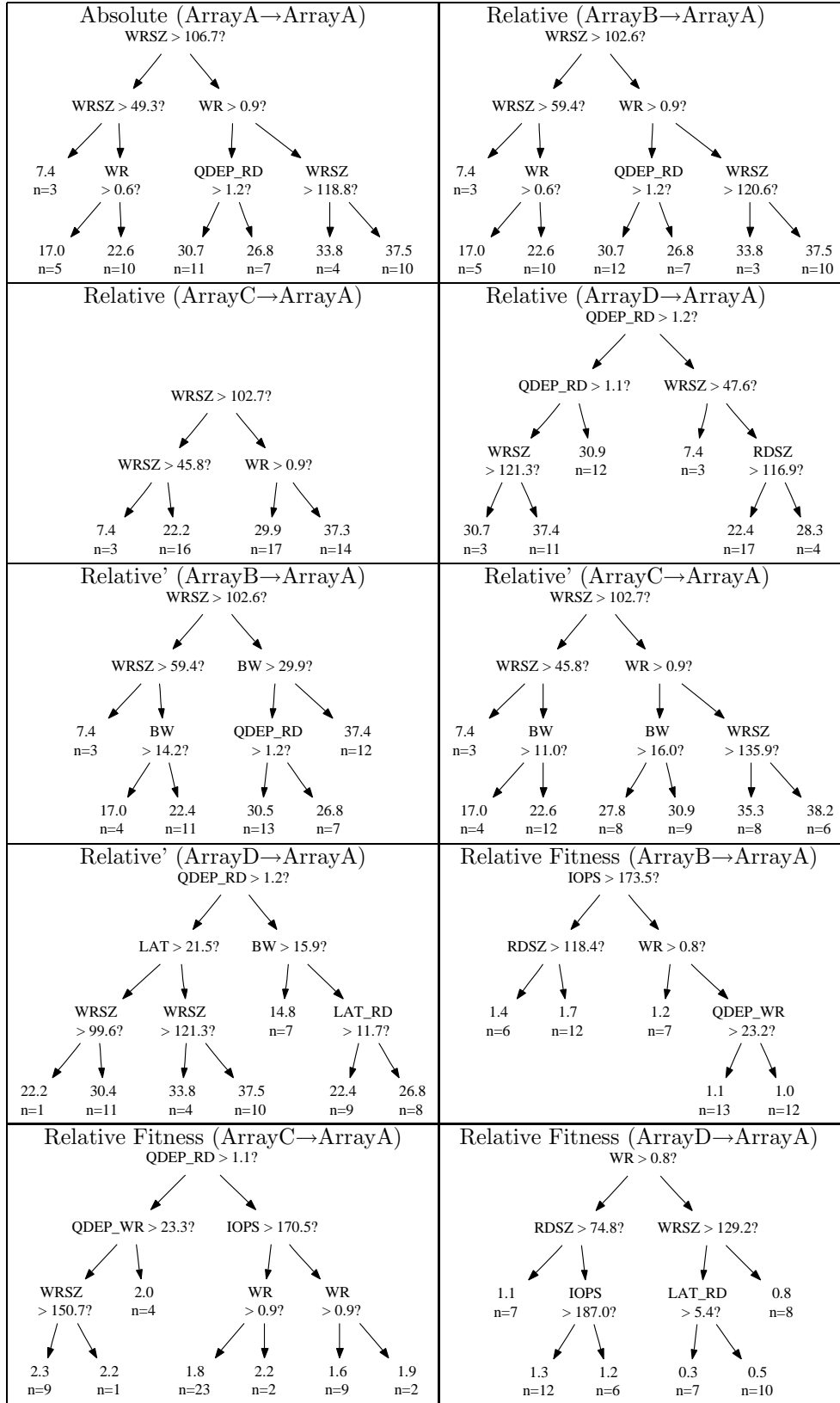


Table E.1: Bandwidth models of ArrayA.

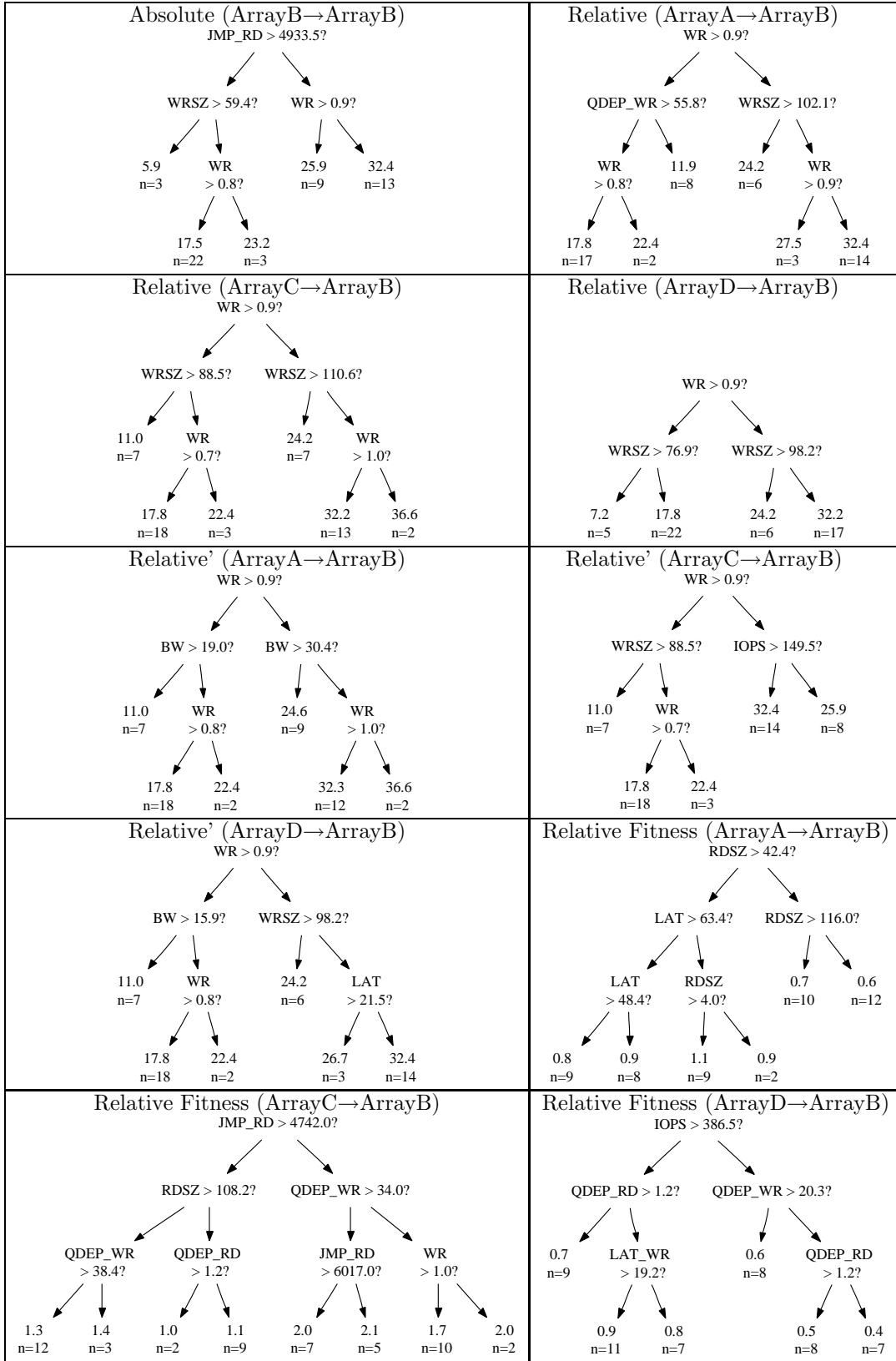


Table E.2: Bandwidth models of ArrayB.

<p>Absolute (ArrayC→ArrayC) WRSZ > 61.3?</p> <pre> graph TD A["WRSZ > 61.3?"] --> B["5.7 n=4"] A --> C["WRSZ > 101.7?"] C --> D["WR > 0.6?"] C --> E["16.1 n=32"] D --> F["10.4 n=5"] D --> G["14.2 n=9"] </pre>	<p>Relative (ArrayA→ArrayC) QDEP_WR > 59.0?</p> <pre> graph TD A["QDEP_WR > 59.0?"] --> B["5.7 n=5"] A --> C["WRSZ > 106.7?"] C --> D["WR > 0.6?"] C --> E["16.1 n=32"] D --> F["10.4 n=3"] D --> G["14.2 n=10"] </pre>
<p>Relative (ArrayB→ArrayC) WRSZ > 70.0?</p> <pre> graph TD A["WRSZ > 70.0?"] --> B["5.7 n=4"] A --> C["WRSZ > 108.9?"] C --> D["WR > 0.6?"] C --> E["16.1 n=30"] D --> F["10.4 n=4"] D --> G["14.2 n=12"] </pre>	<p>Relative (ArrayD→ArrayC) WRSZ > 47.6?</p> <pre> graph TD A["WRSZ > 47.6?"] --> B["5.3 n=3"] A --> C["WR > 0.6?"] C --> D["10.4 n=6"] C --> E["WRSZ > 113.9?"] E --> F["14.3 n=17"] E --> G["16.4 n=24"] </pre>
<p>Relative' (ArrayA→ArrayC) BW > 19.0?</p> <pre> graph TD A["BW > 19.0?"] --> B["8.0 n=7"] A --> C["BW > 26.0?"] C --> D["14.1 n=12"] C --> E["LAT > 34.5?"] E --> F["17.6 n=7"] E --> G["15.9 n=24"] </pre>	<p>Relative' (ArrayB→ArrayC) BW > 15.4?</p> <pre> graph TD A["BW > 15.4?"] --> B["9.5 n=8"] A --> C["WRSZ > 108.9?"] C --> D["14.2 n=12"] C --> E["RDSZ > 135.6?"] E --> F["15.8 n=23"] E --> G["17.6 n=7"] </pre>
<p>Relative' (ArrayD→ArrayC) BW > 17.7?</p> <pre> graph TD A["BW > 17.7?"] --> B["9.5 n=8"] A --> C["15.7 n=42"] </pre>	<p>Relative Fitness (ArrayA→ArrayC) BW > 33.3?</p> <pre> graph TD A["BW > 33.3?"] --> B["0.4 n=12"] A --> C["BW > 22.5?"] C --> D["RDSZ > 24.6?"] C --> E["QDEP_WR > 33.1?"] D --> F["0.7 n=7"] D --> G["0.6 n=6"] E --> H["0.5 n=5"] E --> I["0.6 n=20"] </pre>
<p>Relative Fitness (ArrayB→ArrayC) WR > 0.8?</p> <pre> graph TD A["WR > 0.8?"] --> B["RDSZ > 119.4?"] A --> C["BW > 28.9?"] B --> D["0.8 n=13"] B --> E["0.9 n=12"] C --> F["0.6 n=11"] C --> G["0.5 n=14"] </pre>	<p>Relative Fitness (ArrayD→ArrayC) WR > 0.8?</p> <pre> graph TD A["WR > 0.8?"] --> B["0.7 n=25"] A --> C["BW > 56.5?"] C --> D["0.3 n=13"] C --> E["0.2 n=12"] </pre>

Table E.3: Bandwidth models of ArrayC.

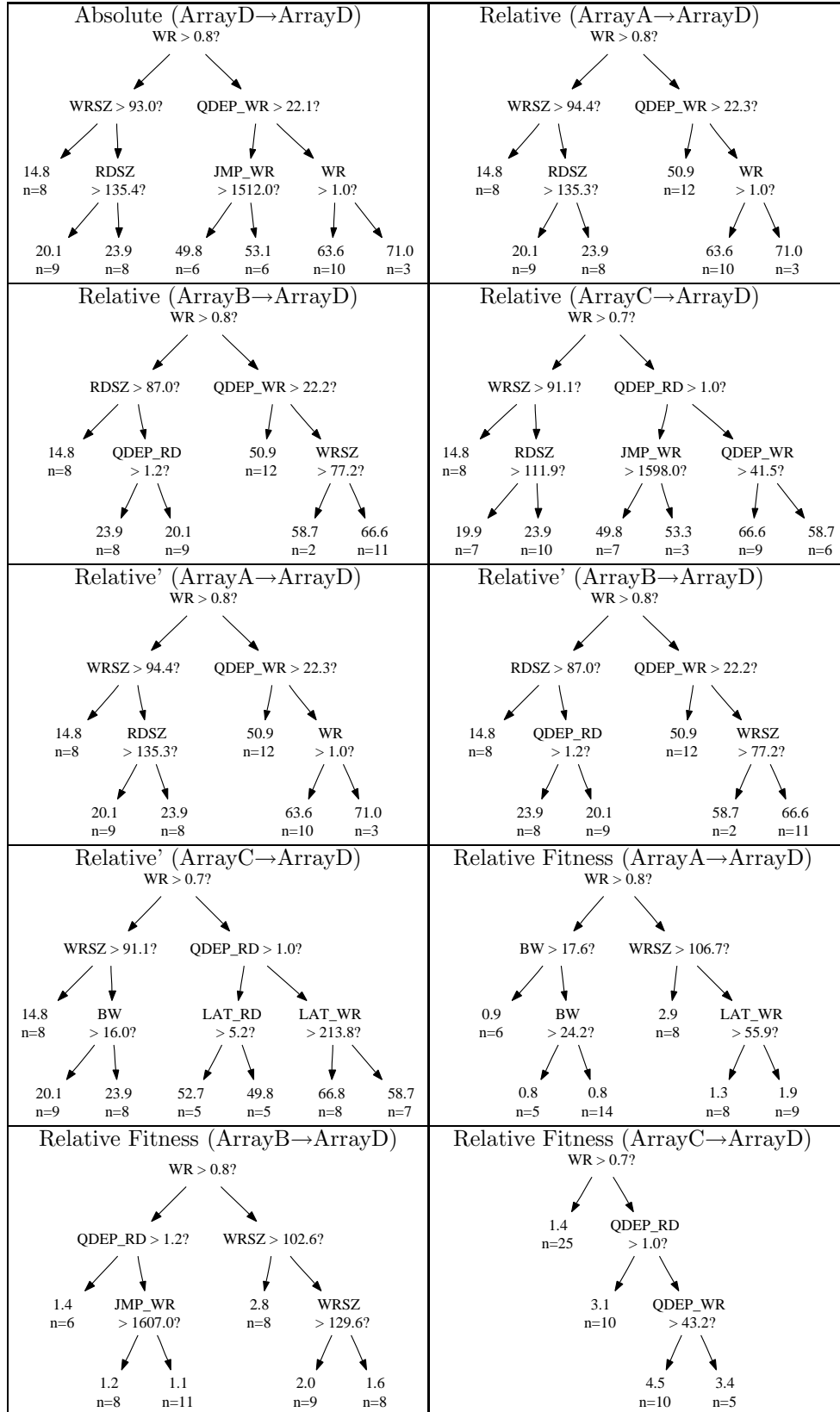


Table E.4: Bandwidth models of ArrayD.

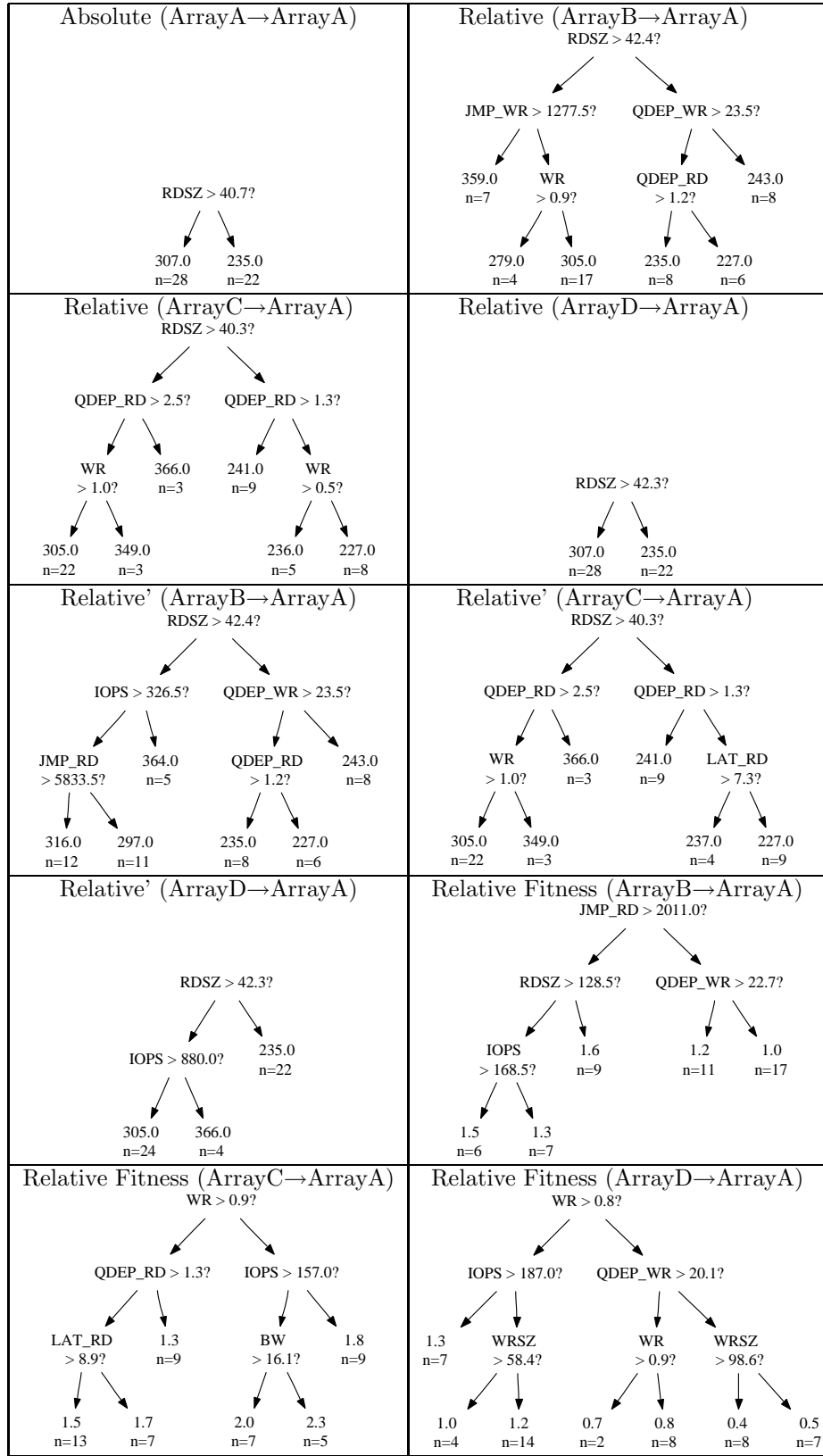


Table E.5: Throughput models of ArrayA.

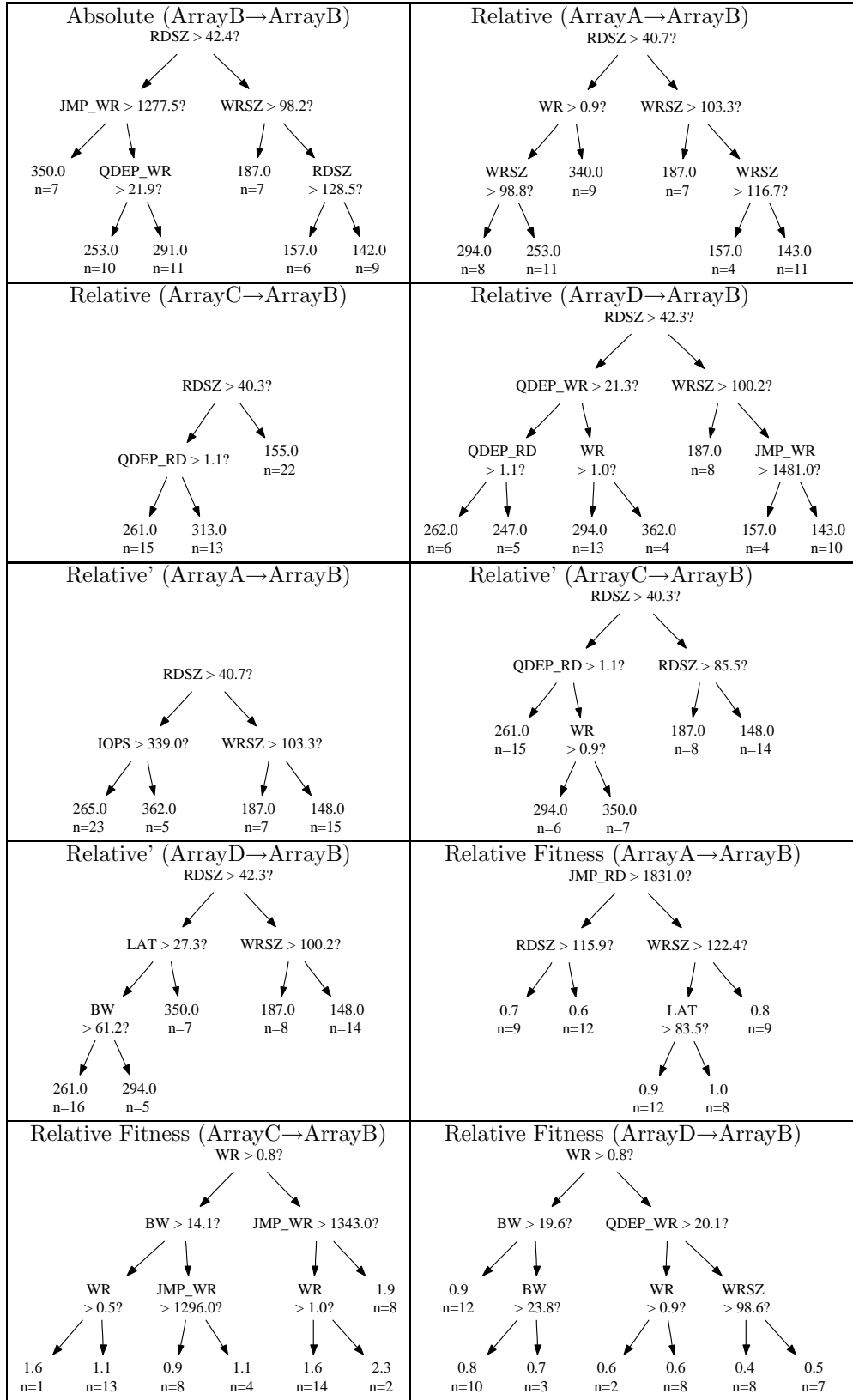


Table E.6: Throughput models of ArrayB.

<p>Absolute (ArrayC→ArrayC) JMP_WR > 630.5?</p> <pre> graph TD A["JMP_WR > 630.5? n=6"] --> B["219.0 n=6"] A --> C["WRSZ > 115.4?"] B --> D["QDEP_RD > 1.4?"] B --> E["QDEP_WR > 20.9?"] D --> F["158.0 n=29"] D --> G["180.0 n=5"] E --> H["133.0 n=6"] E --> I["145.0 n=4"] </pre>	<p>Relative (ArrayA→ArrayC) JMP_WR > 1199.5?</p> <pre> graph TD A["JMP_WR > 1199.5? n=7"] --> B["218.0 n=7"] A --> C["WRSZ > 130.7?"] C --> D["158.0 n=32"] C --> E["139.0 n=11"] </pre>
<p>Relative (ArrayB→ArrayC) QDEP_WR > 38.7?</p> <pre> graph TD A["QDEP_WR > 38.7?"] --> B["JMP_WR > 1939.5?"] A --> C["218.0 n=7"] B --> D["QDEP_RD > 1.1?"] B --> E["190.0 n=5"] D --> F["139.0 n=6"] D --> G["156.0 n=32"] </pre>	<p>Relative (ArrayD→ArrayC) QDEP_WR > 44.2?</p> <pre> graph TD A["QDEP_WR > 44.2?"] --> B["156.0 n=44"] A --> C["219.0 n=6"] </pre>
<p>Relative' (ArrayA→ArrayC) JMP_WR > 1199.5?</p> <pre> graph TD A["JMP_WR > 1199.5?"] --> B["218.0 n=7"] A --> C["155.0 n=43"] </pre>	<p>Relative' (ArrayB→ArrayC) QDEP_WR > 38.7?</p> <pre> graph TD A["QDEP_WR > 38.7?"] --> B["JMP_WR > 1939.5?"] A --> C["218.0 n=7"] B --> D["QDEP_RD > 1.1?"] B --> E["190.0 n=5"] D --> F["139.0 n=6"] D --> G["156.0 n=32"] </pre>
<p>Relative' (ArrayD→ArrayC) QDEP_WR > 44.2?</p> <pre> graph TD A["QDEP_WR > 44.2?"] --> B["IOPS > 712.5?"] A --> C["219.0 n=6"] B --> D["WRSZ > 135.8?"] B --> E["192.0 n=5"] D --> F["156.0 n=33"] D --> G["139.0 n=6"] </pre>	<p>Relative Fitness (ArrayA→ArrayC) BW > 33.3?</p> <pre> graph TD A["BW > 33.3?"] --> B["0.6 n=38"] A --> C["0.5 n=12"] </pre>
<p>Relative Fitness (ArrayB→ArrayC) JMP_RD > 2043.0?</p> <pre> graph TD A["JMP_RD > 2043.0?"] --> B["QDEP_RD > 1.2?"] A --> C["BW > 27.7?"] B --> D["1.1 n=13"] B --> E["0.9 n=10"] C --> F["0.6 n=13"] C --> G["0.5 n=14"] </pre>	<p>Relative Fitness (ArrayD→ArrayC) WR > 0.8?</p> <pre> graph TD A["WR > 0.8?"] --> B["0.8 n=25"] A --> C["QDEP_WR > 22.1?"] C --> D["0.3 n=12"] C --> E["0.2 n=13"] </pre>

Table E.7: Throughput models of ArrayC.

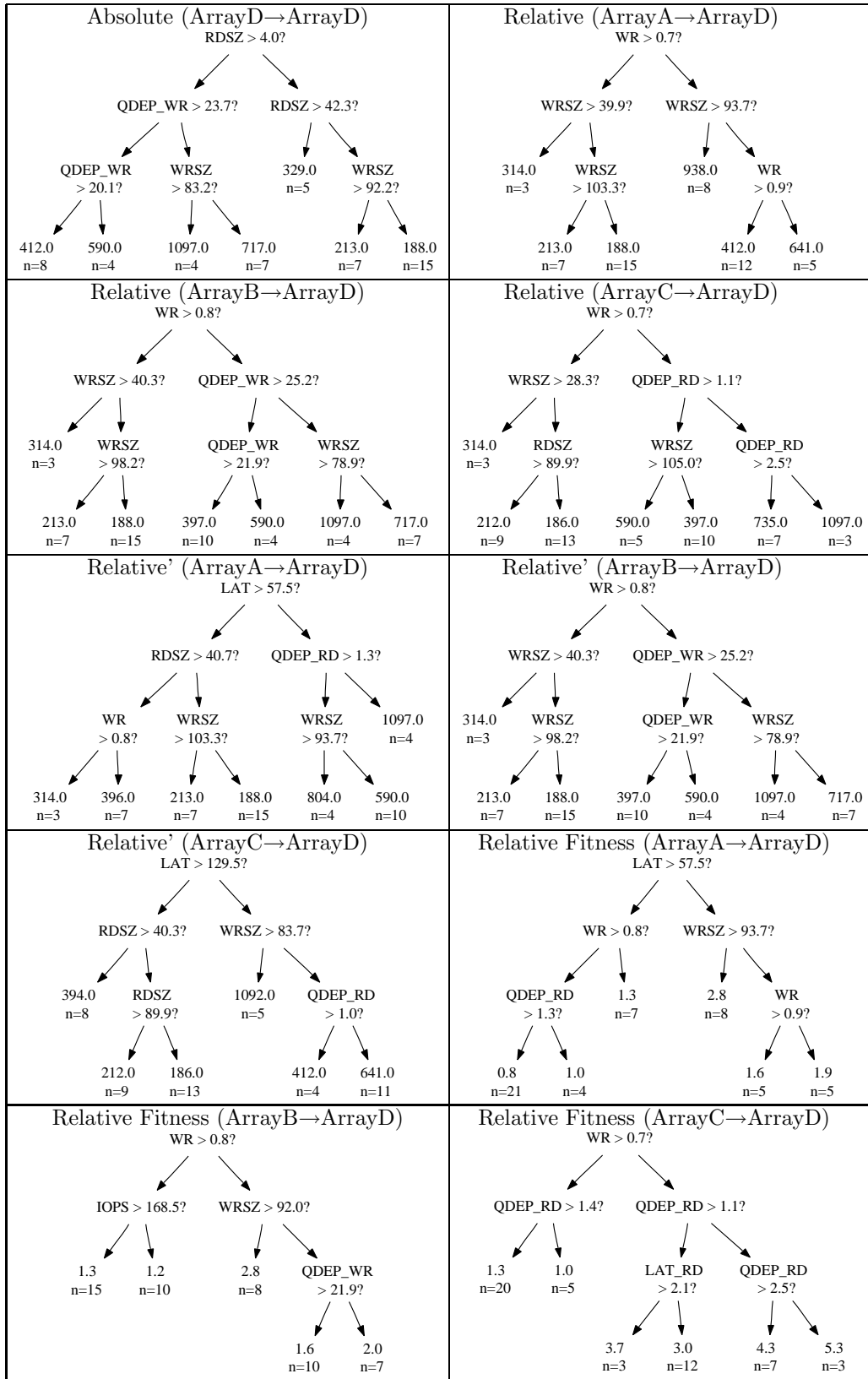


Table E.8: Throughput models of ArrayD.

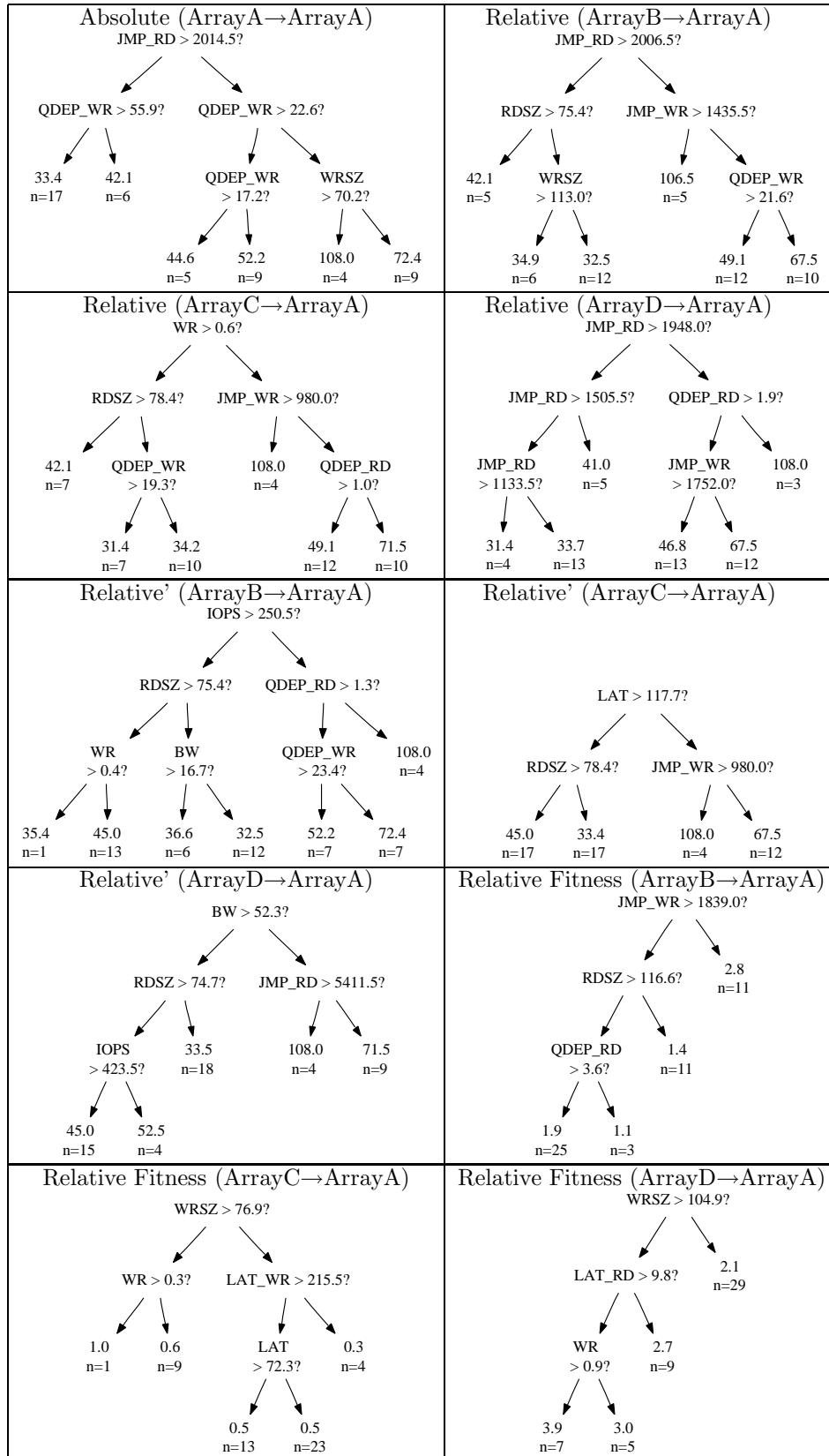


Table E.9: Latency models of ArrayA.

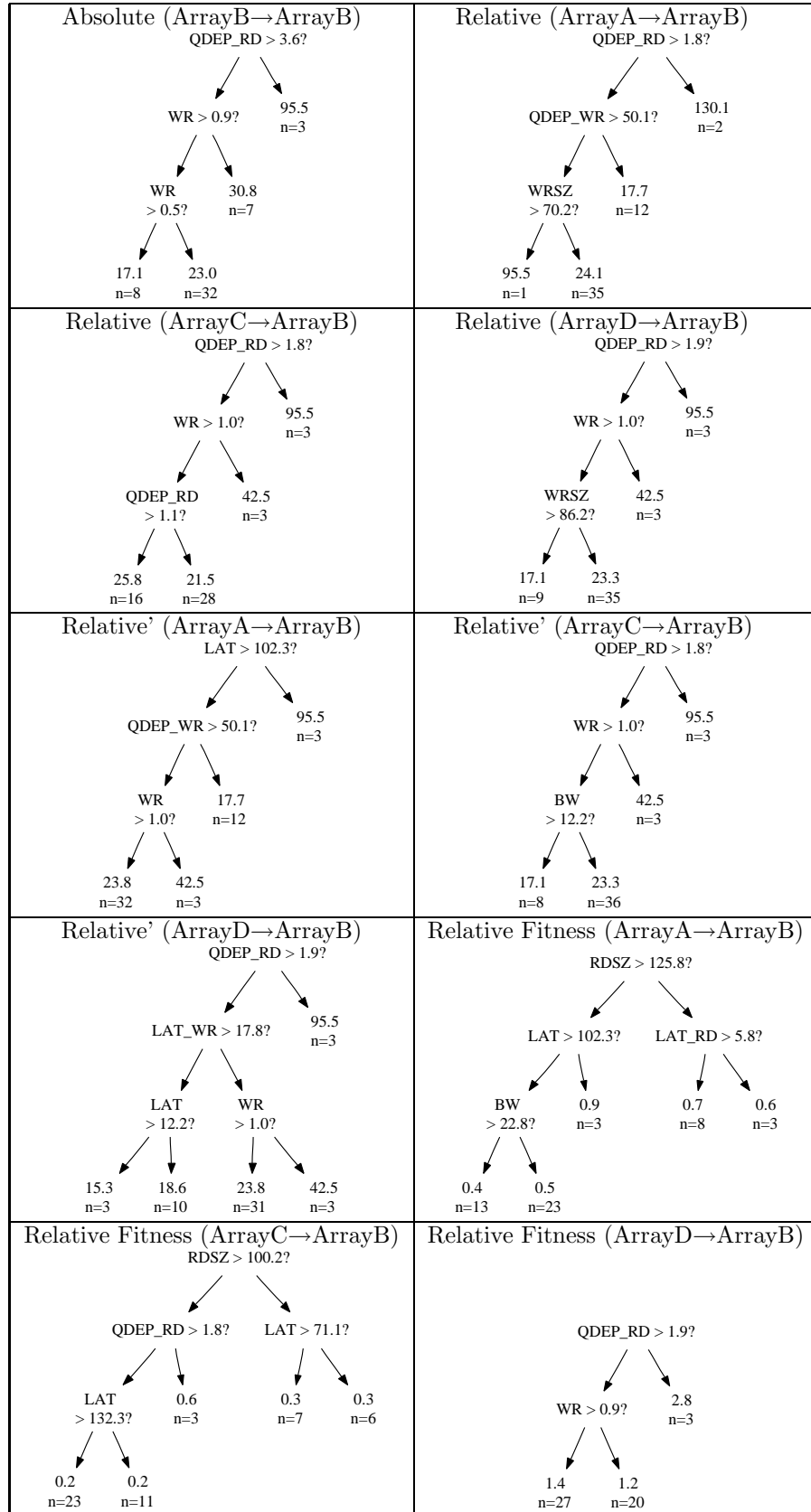


Table E.10: Latency models of ArrayB.

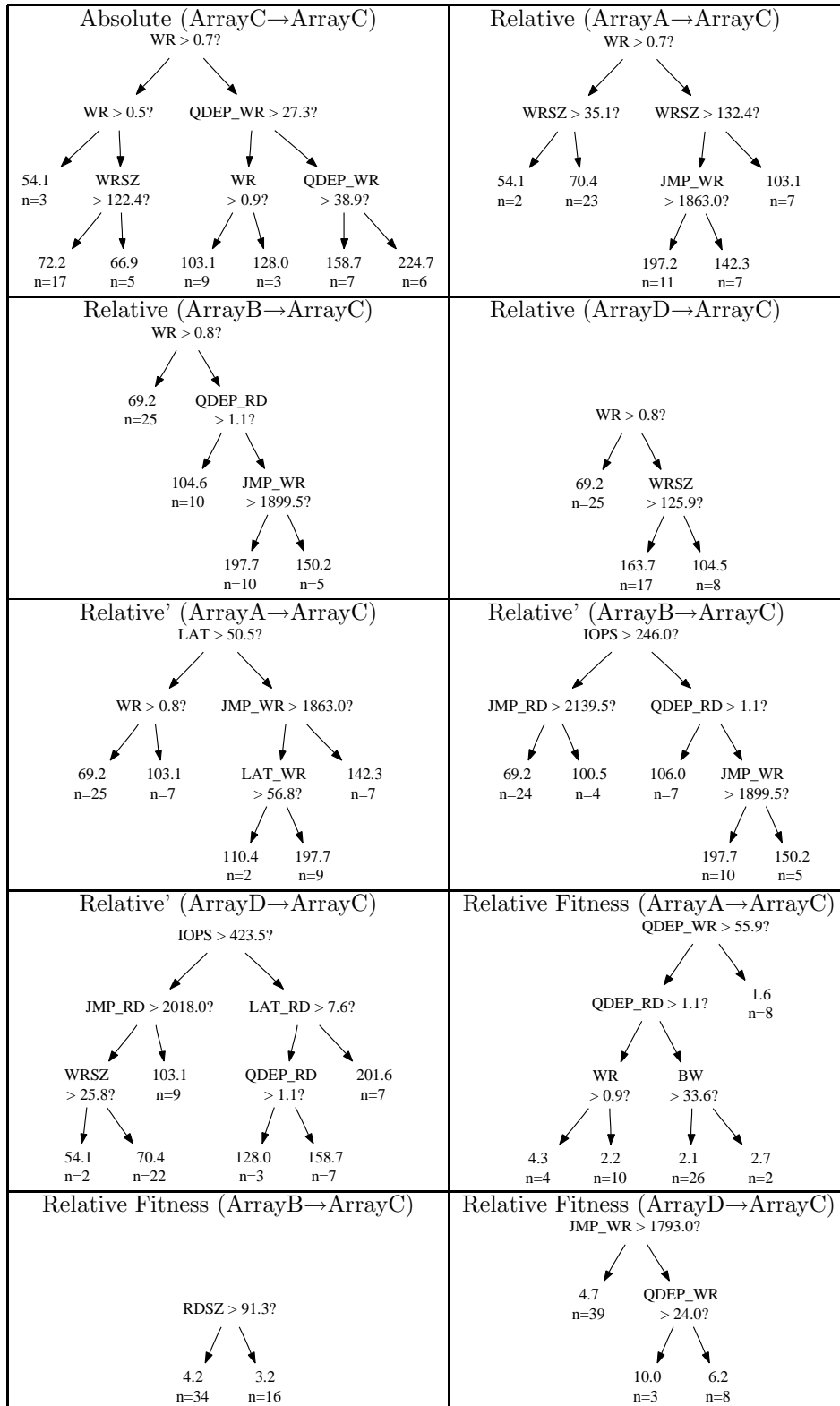


Table E.11: Latency models of ArrayC.

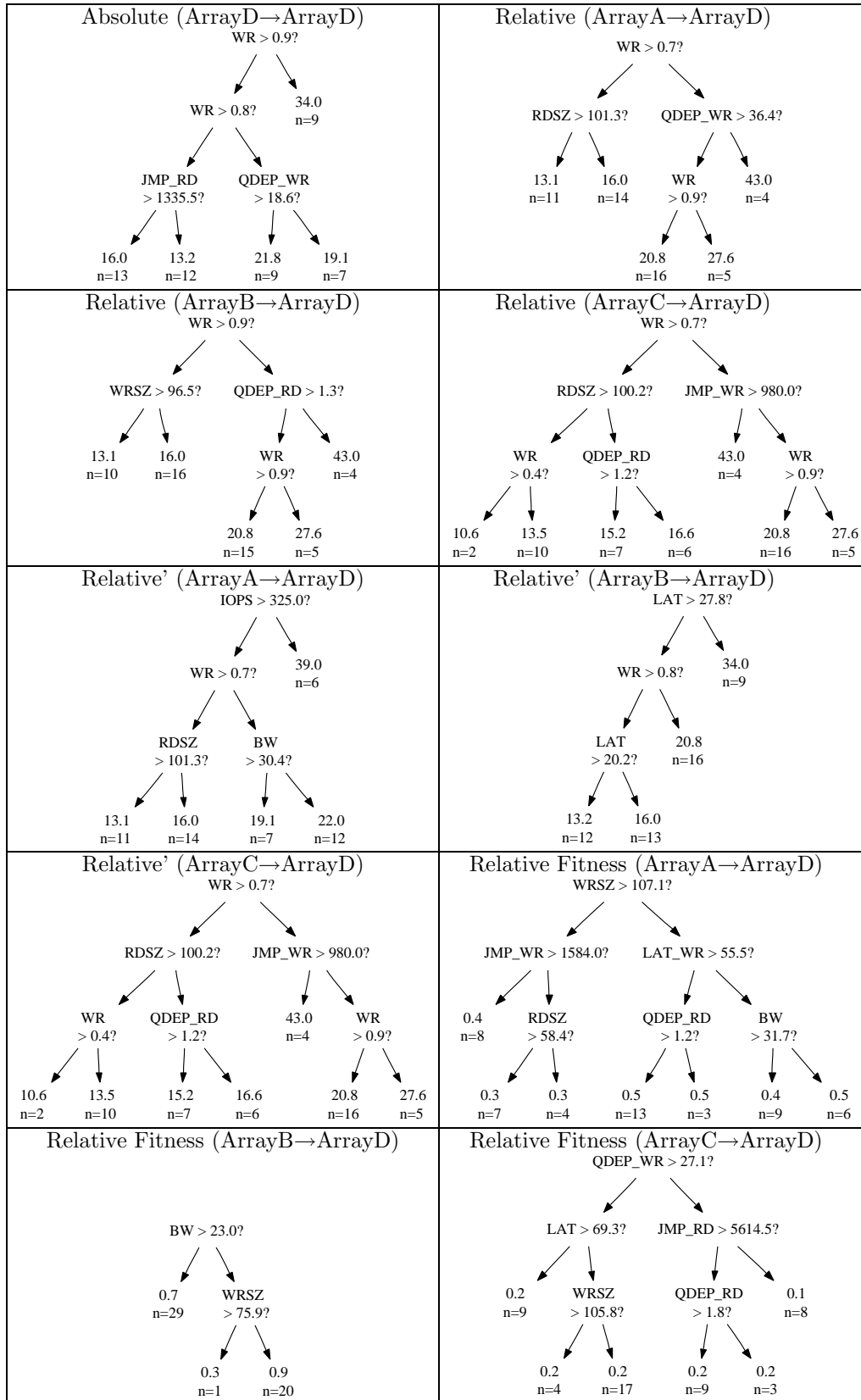


Table E.12: Latency models of ArrayD.

Appendix F

Postmark models

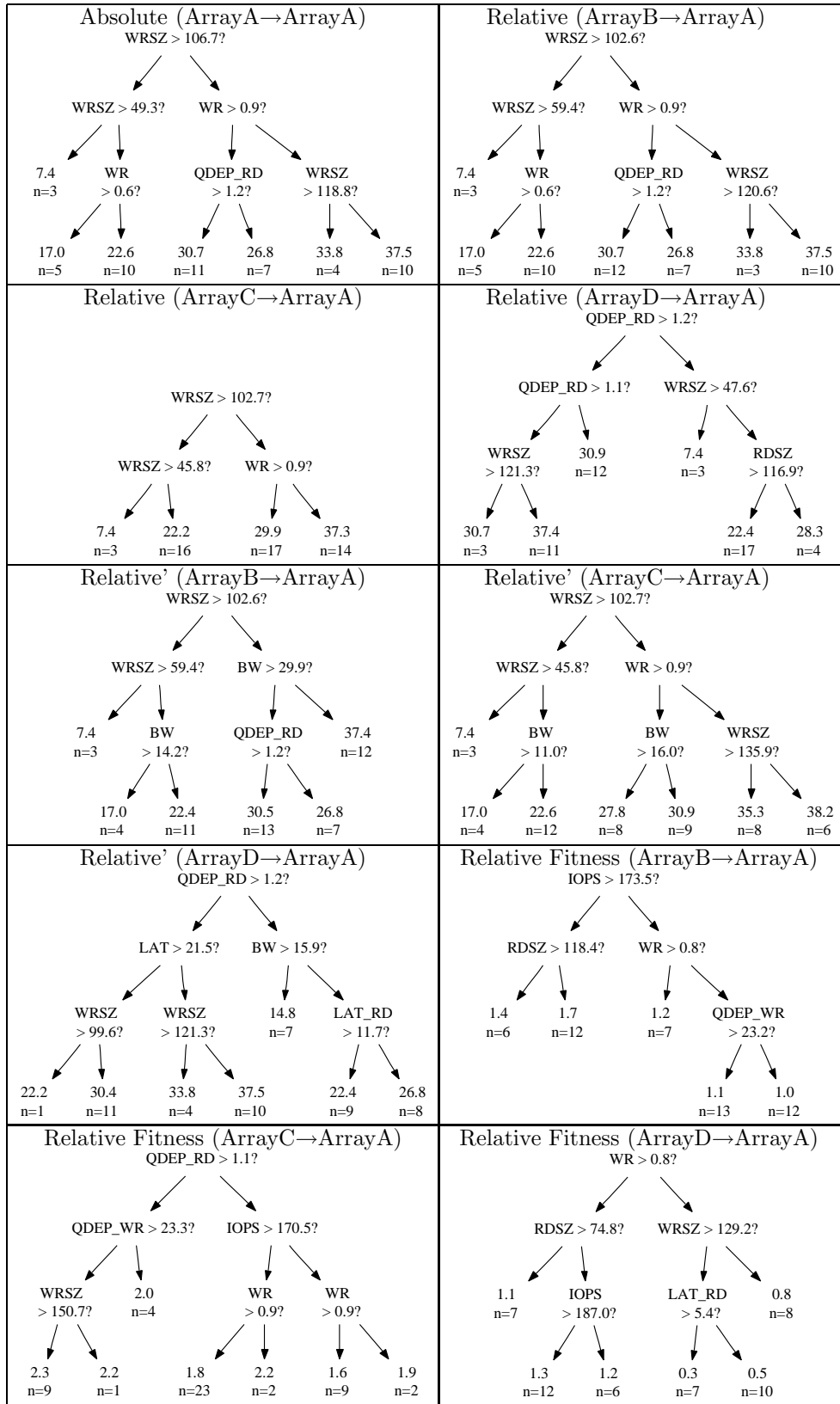


Table F.1: Bandwidth models of ArrayA.

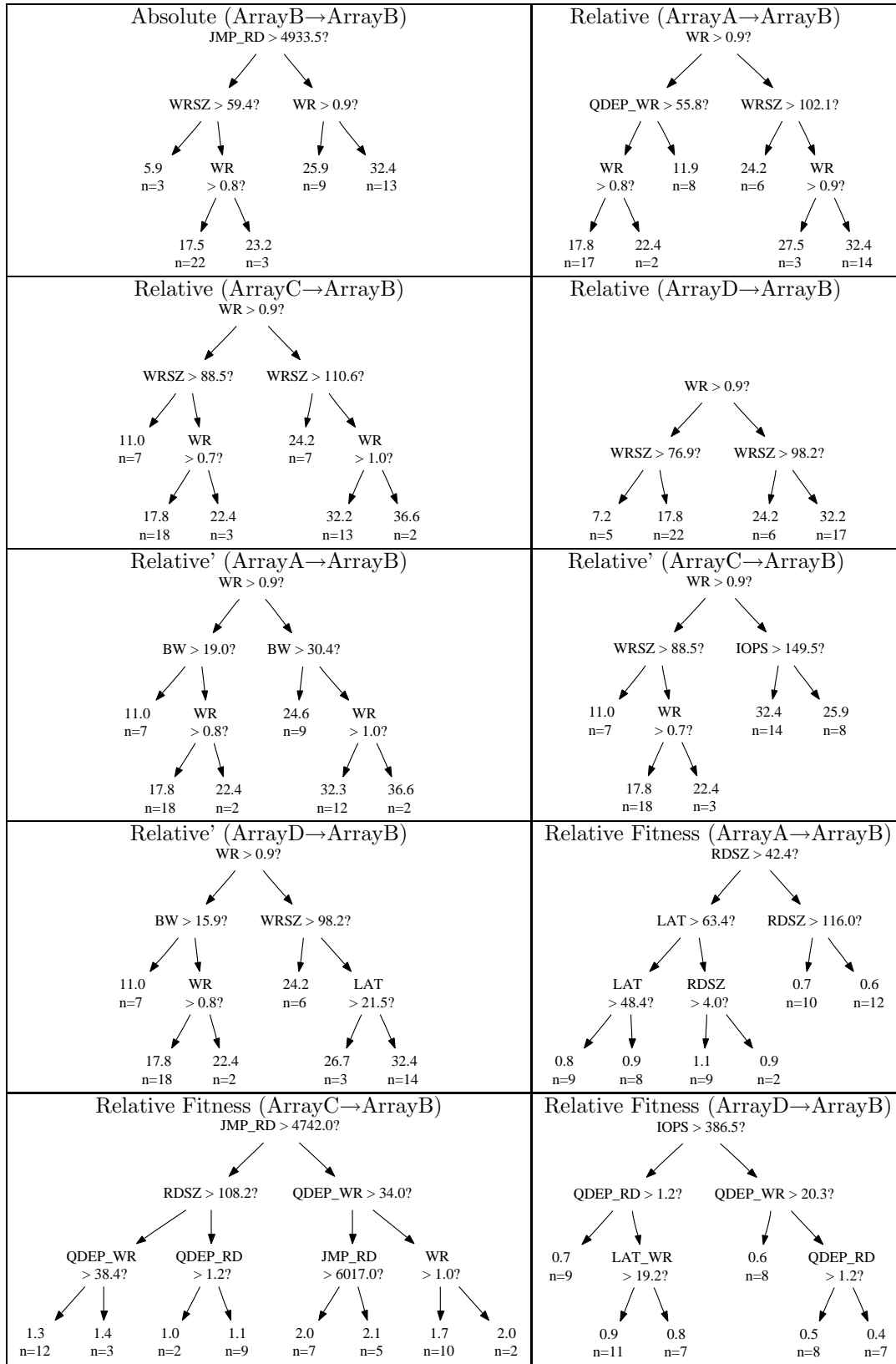


Table F.2: Bandwidth models of ArrayB.

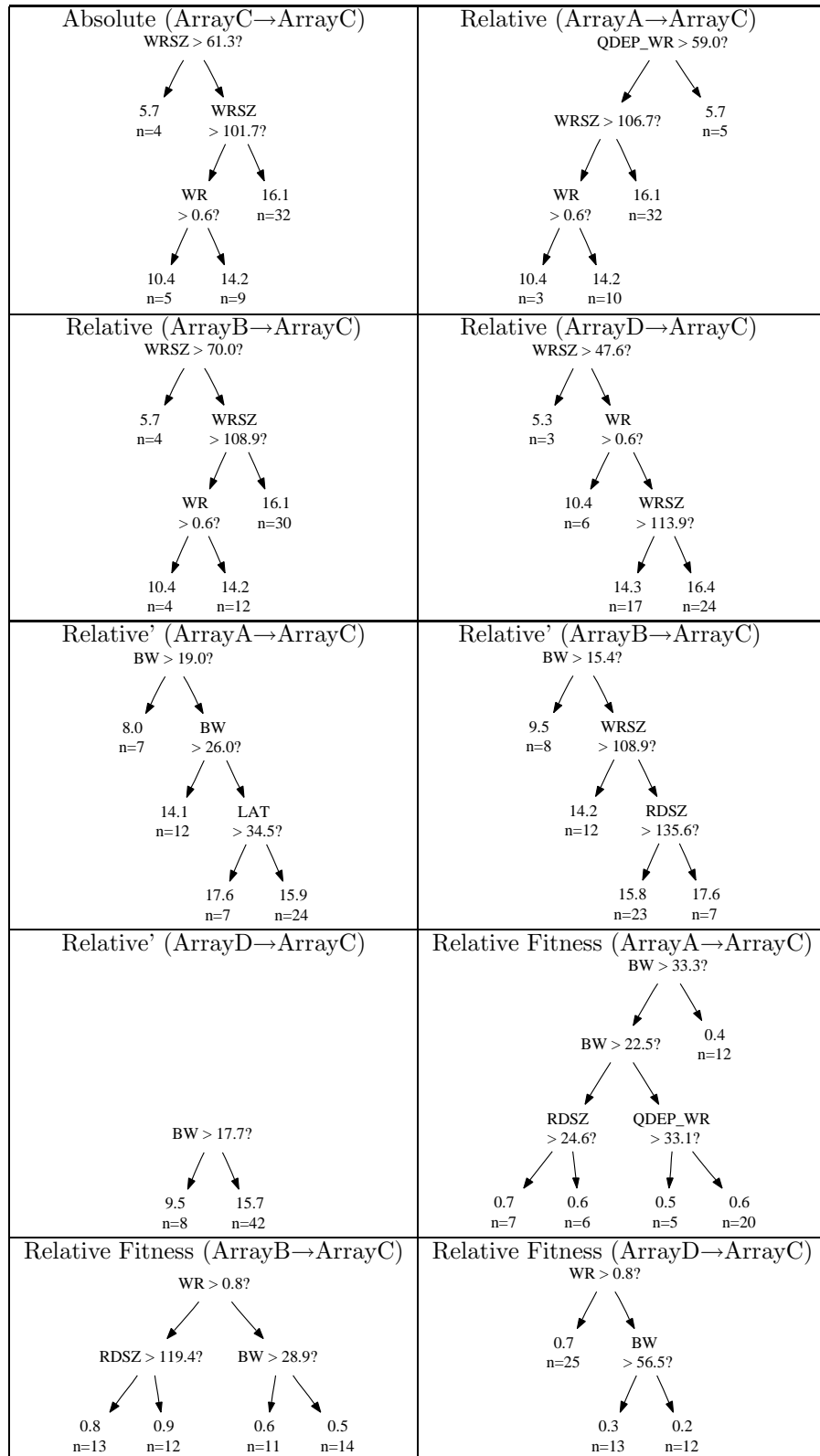


Table F.3: Bandwidth models of ArrayC.

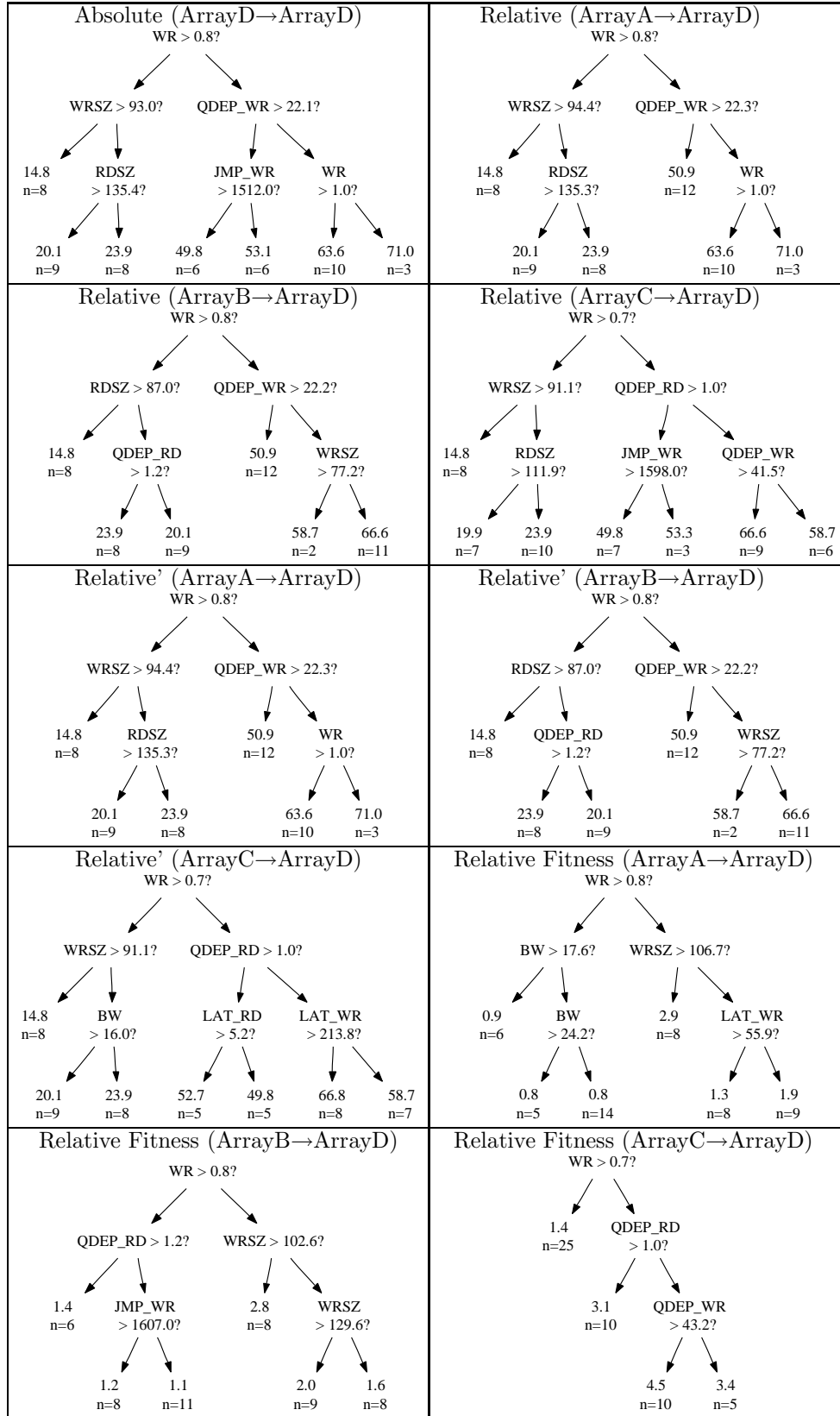


Table F.4: Bandwidth models of ArrayD.

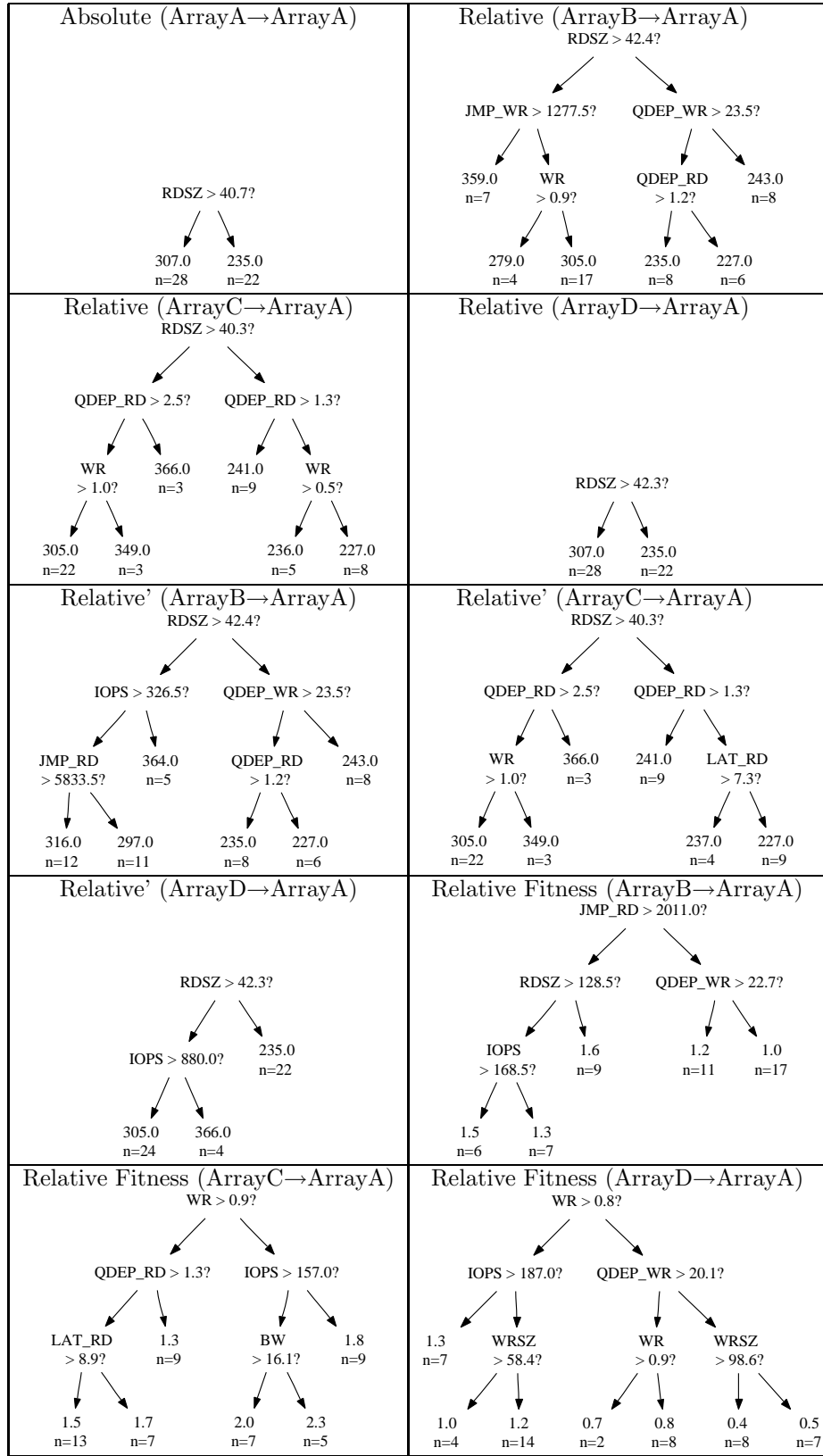


Table F.5: Throughput models of ArrayA.

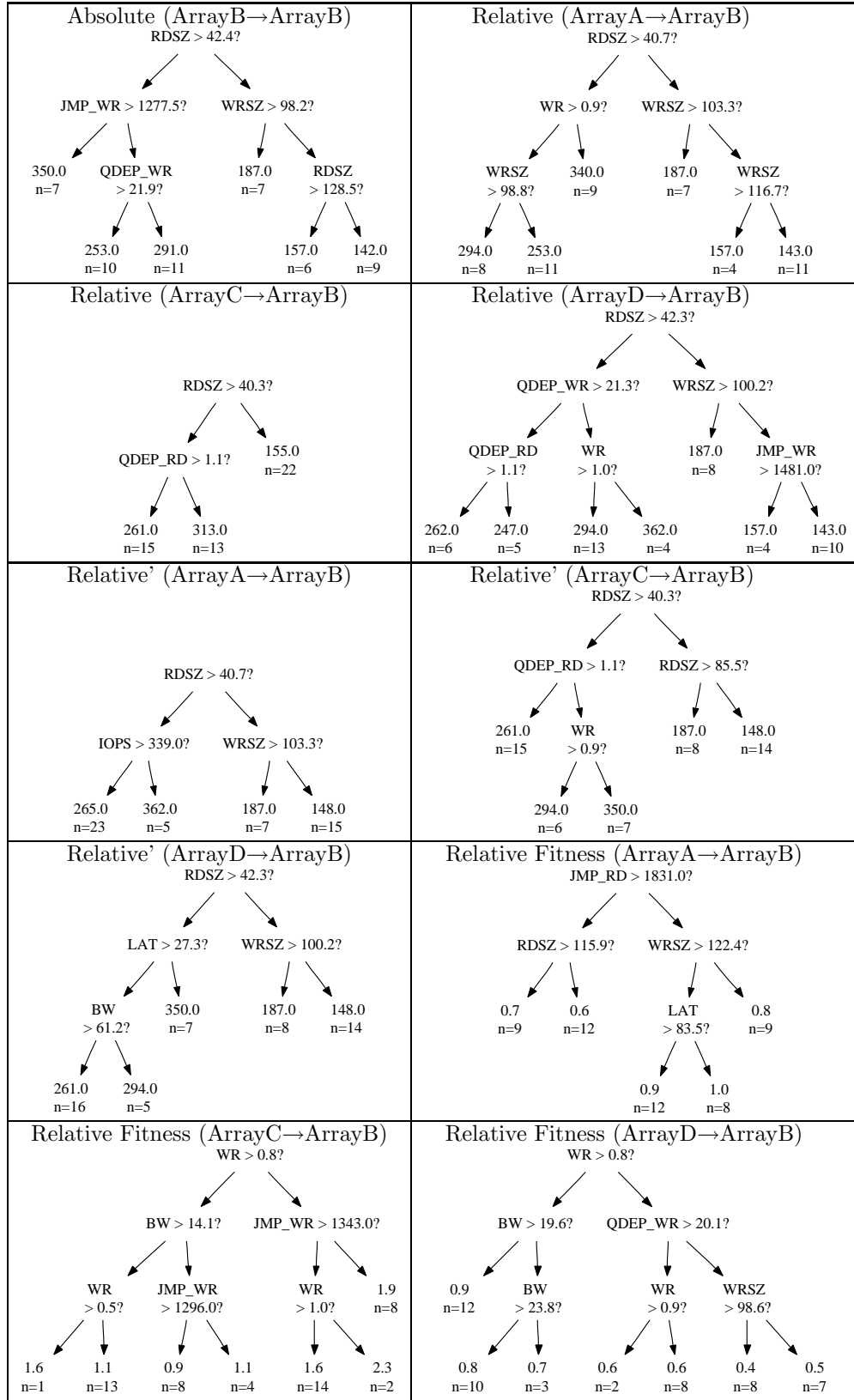


Table F.6: Throughput models of ArrayB.

<p>Absolute (ArrayC→ArrayC) JMP_WR > 630.5?</p> <pre> graph TD A["JMP_WR > 630.5?"] --> B["219.0 n=6"] A --> C["WRSZ > 115.4?"] B --> D["QDEP_RD > 1.4?"] B --> E["QDEP_WR > 20.9?"] C --> D C --> E D --> F["158.0 n=29"] D --> G["180.0 n=5"] E --> H["133.0 n=6"] E --> I["145.0 n=4"] </pre>	<p>Relative (ArrayA→ArrayC) JMP_WR > 1199.5?</p> <pre> graph TD A["JMP_WR > 1199.5?"] --> B["218.0 n=7"] A --> C["WRSZ > 130.7?"] B --> D["158.0 n=32"] B --> E["139.0 n=11"] </pre>
<p>Relative (ArrayB→ArrayC) QDEP_WR > 38.7?</p> <pre> graph TD A["QDEP_WR > 38.7?"] --> B["JMP_WR > 1939.5?"] A --> C["218.0 n=7"] B --> D["QDEP_RD > 1.1?"] B --> E["190.0 n=5"] D --> F["139.0 n=6"] D --> G["156.0 n=32"] </pre>	<p>Relative (ArrayD→ArrayC) QDEP_WR > 44.2?</p> <pre> graph TD A["QDEP_WR > 44.2?"] --> B["156.0 n=44"] A --> C["219.0 n=6"] </pre>
<p>Relative' (ArrayA→ArrayC) JMP_WR > 1199.5?</p> <pre> graph TD A["JMP_WR > 1199.5?"] --> B["218.0 n=7"] A --> C["155.0 n=43"] </pre>	<p>Relative' (ArrayB→ArrayC) QDEP_WR > 38.7?</p> <pre> graph TD A["QDEP_WR > 38.7?"] --> B["JMP_WR > 1939.5?"] A --> C["218.0 n=7"] B --> D["QDEP_RD > 1.1?"] B --> E["190.0 n=5"] D --> F["139.0 n=6"] D --> G["156.0 n=32"] </pre>
<p>Relative' (ArrayD→ArrayC) QDEP_WR > 44.2?</p> <pre> graph TD A["QDEP_WR > 44.2?"] --> B["IOPS > 712.5?"] A --> C["219.0 n=6"] B --> D["WRSZ > 135.8?"] B --> E["192.0 n=5"] D --> F["156.0 n=33"] D --> G["139.0 n=6"] </pre>	<p>Relative Fitness (ArrayA→ArrayC) BW > 33.3?</p> <pre> graph TD A["BW > 33.3?"] --> B["0.6 n=38"] A --> C["0.5 n=12"] </pre>
<p>Relative Fitness (ArrayB→ArrayC) JMP_RD > 2043.0?</p> <pre> graph TD A["JMP_RD > 2043.0?"] --> B["QDEP_RD > 1.2?"] A --> C["BW > 27.7?"] B --> D["1.1 n=13"] B --> E["0.9 n=10"] C --> F["0.6 n=13"] C --> G["0.5 n=14"] </pre>	<p>Relative Fitness (ArrayD→ArrayC) WR > 0.8?</p> <pre> graph TD A["WR > 0.8?"] --> B["0.8 n=25"] A --> C["QDEP_WR > 22.1?"] C --> D["0.3 n=12"] C --> E["0.2 n=13"] </pre>

Table F.7: Throughput models of ArrayC.

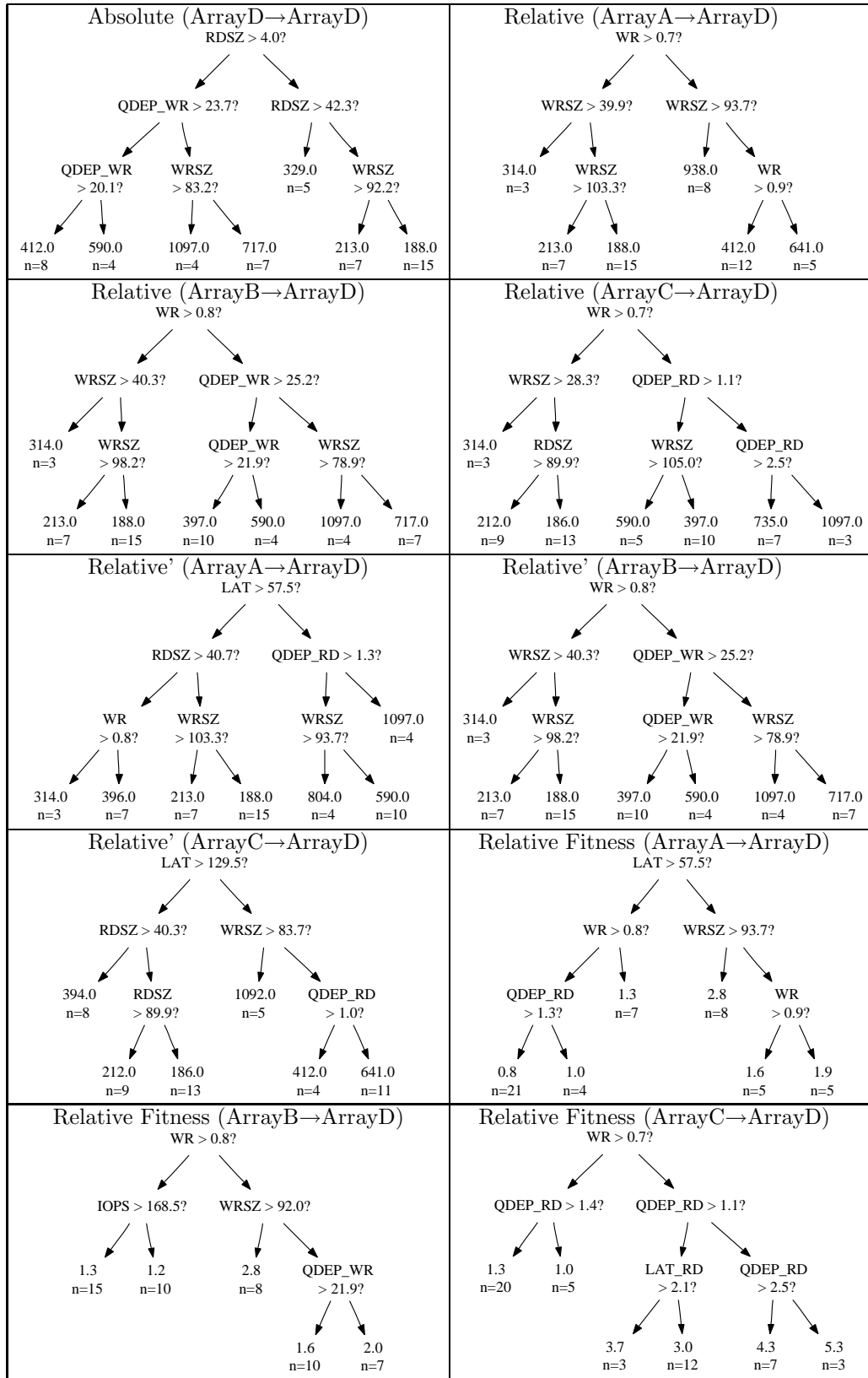


Table F.8: Throughput models of ArrayD.

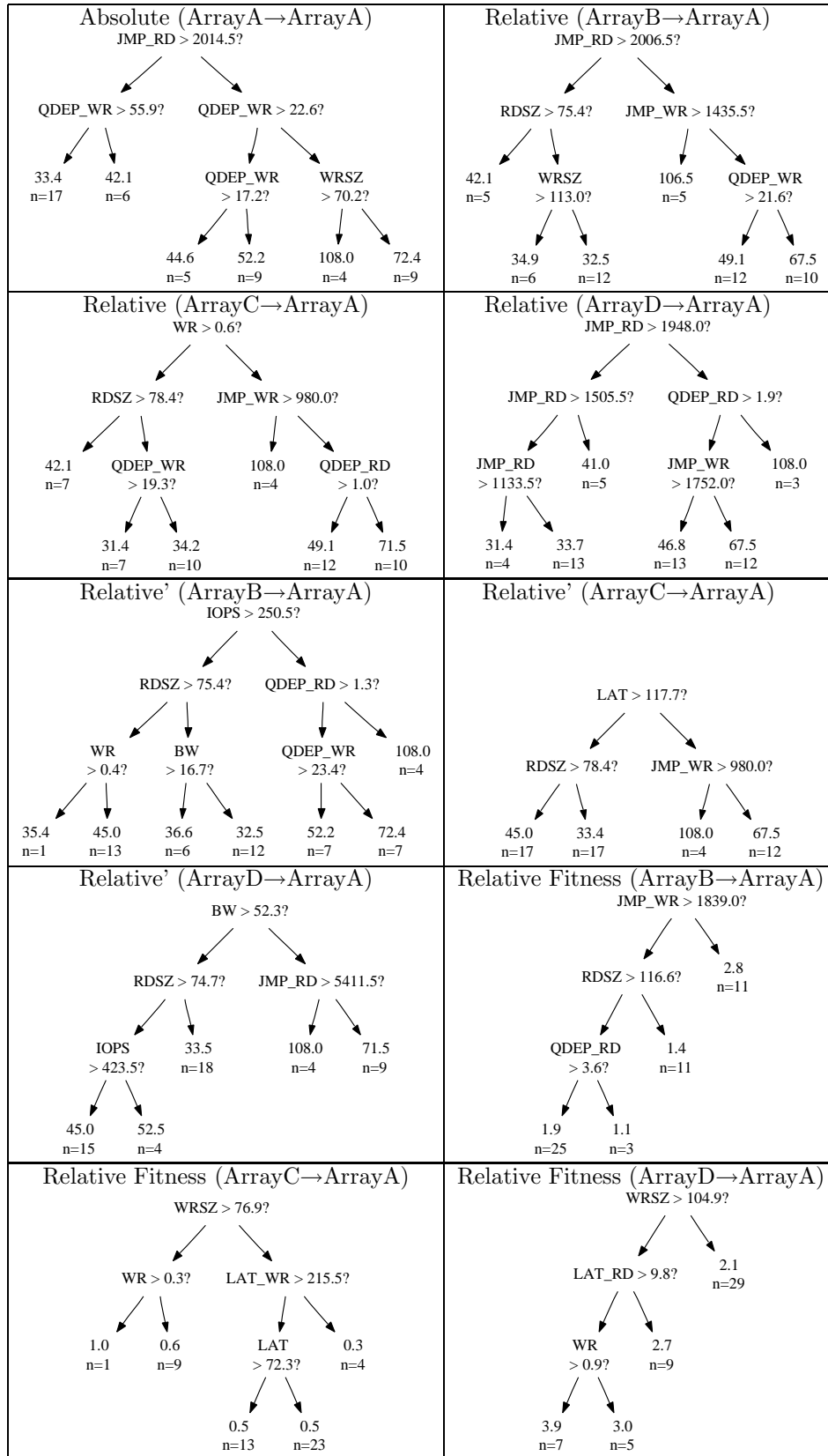


Table F.9: Latency models of ArrayA.

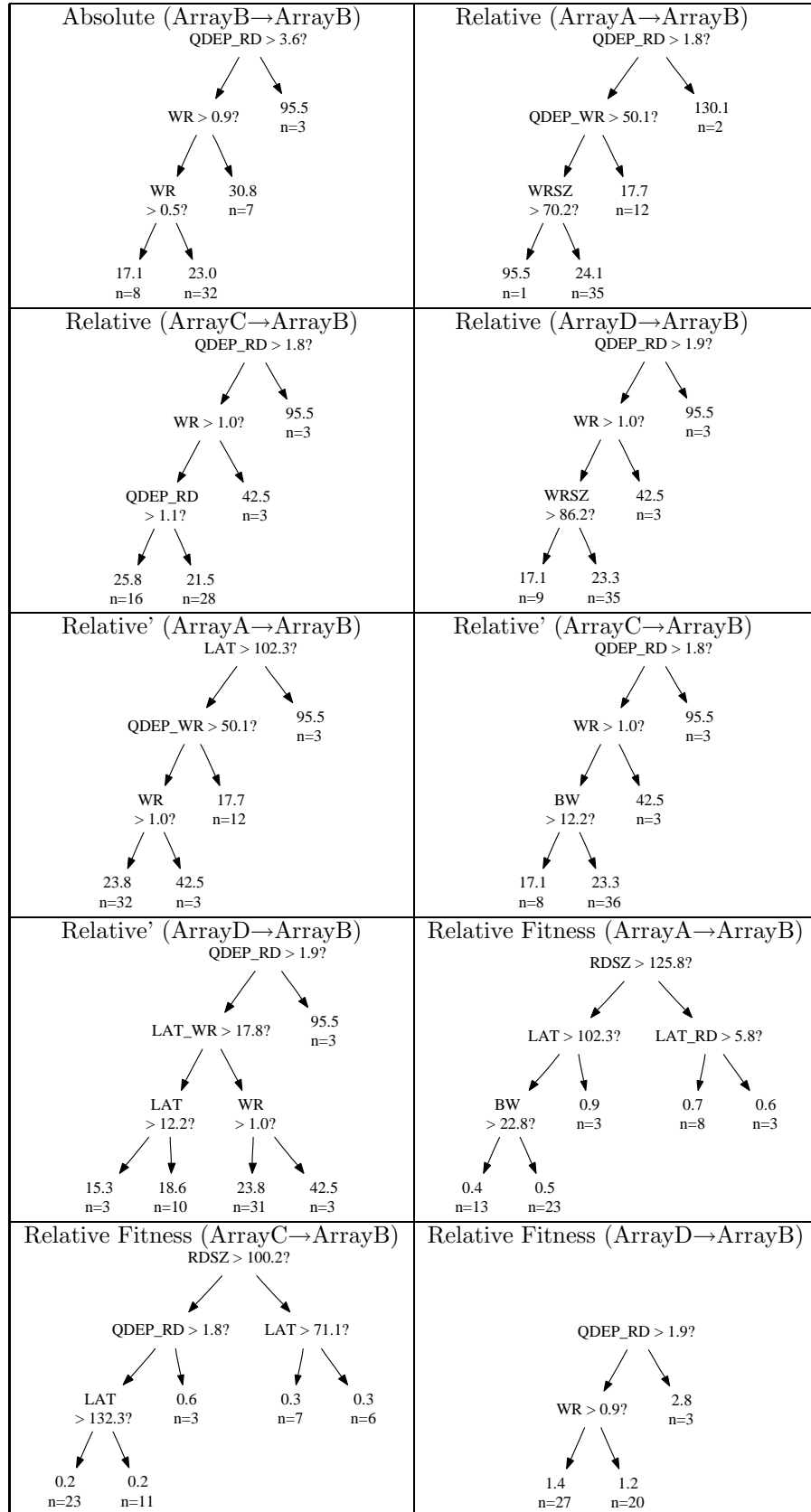


Table F.10: Latency models of ArrayB.

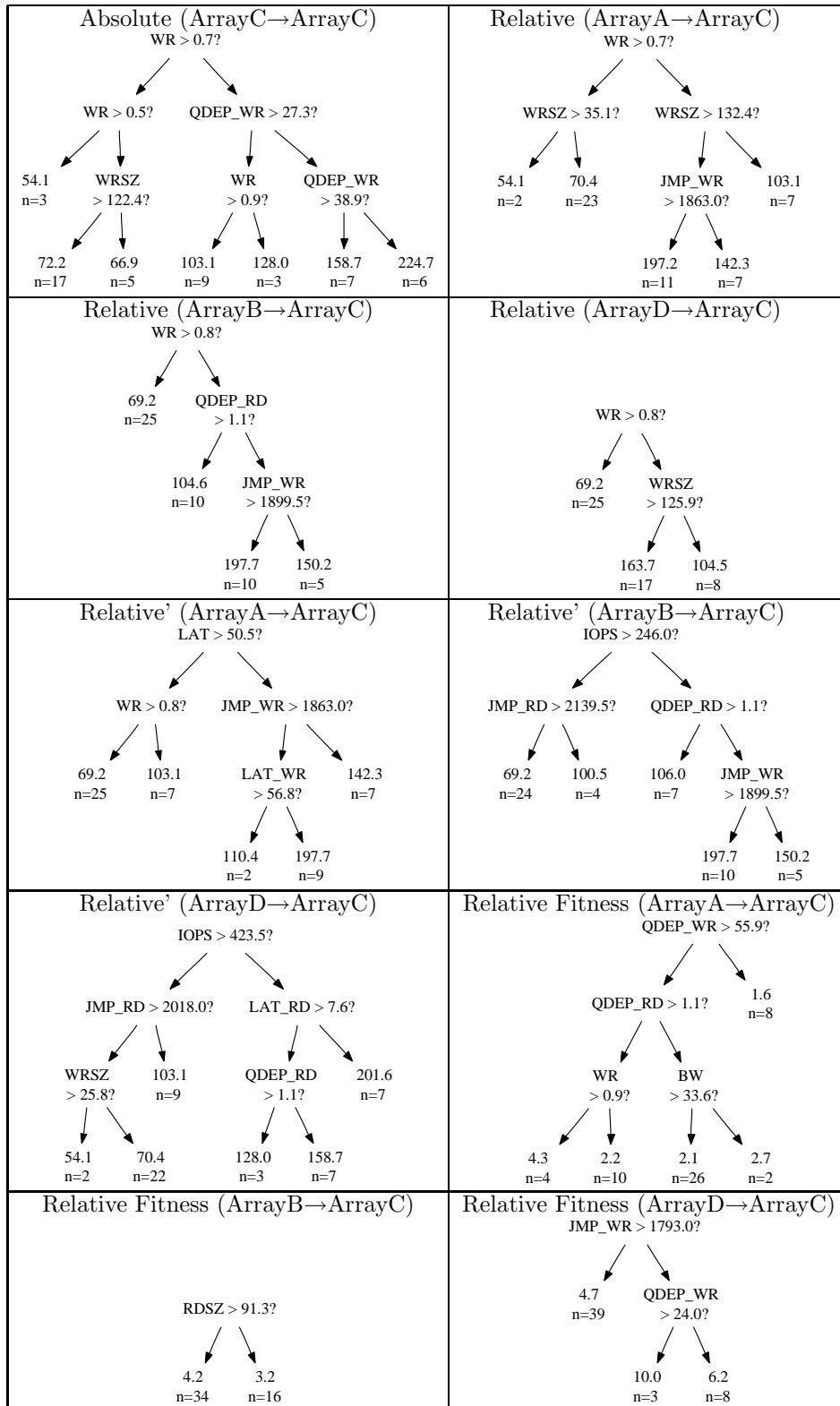


Table F.11: Latency models of ArrayC.

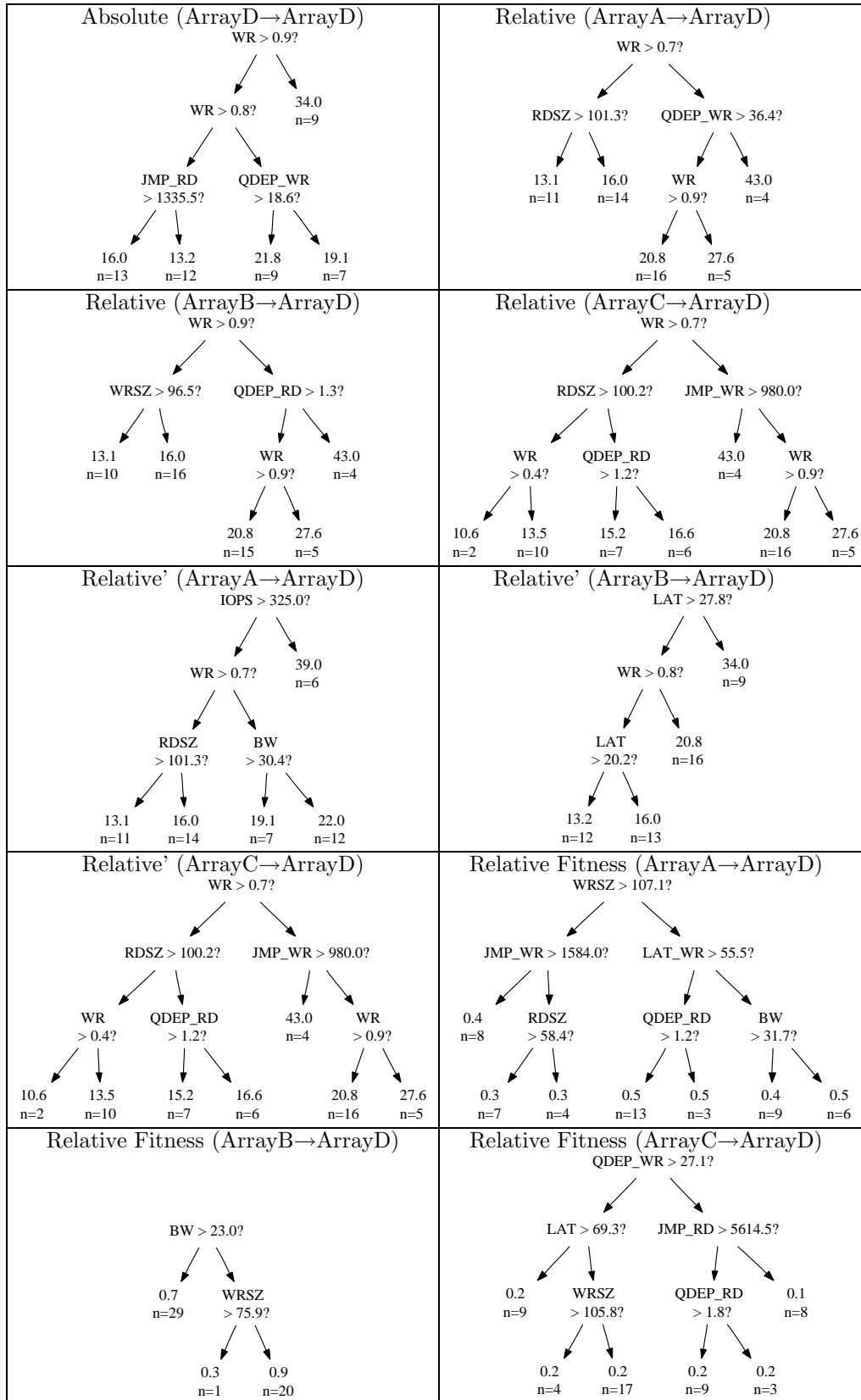


Table F.12: Latency models of ArrayD.

Appendix G

TPC-C models

<p>Absolute (ArrayA→ArrayA) JMP_RD > 232.0?</p> <pre> graph TD A["2.2 n=7"] --> B["JMP_RD > 300.0?"] A --> C["1.6 n=8"] B --> D["RDSZ > 8.0?"] B --> E["1.4 n=3"] D --> F["1.5 n=7"] D --> G["1.4 n=3"] </pre>	<p>Relative (ArrayB→ArrayA) JMP_RD > 227.0?</p> <pre> graph TD A["2.2 n=7"] --> B["JMP_RD > 275.0?"] A --> C["1.6 n=5"] B --> D["QDEP_WR > 24.0?"] B --> E["1.4 n=4"] D --> F["1.5 n=9"] D --> G["1.4 n=4"] </pre>
<p>Relative (ArrayC→ArrayA)</p> <pre> graph TD A["JMP_RD > 245.0?"] --> B["2.2 n=7"] A --> C["1.5 n=18"] </pre>	<p>Relative (ArrayD→ArrayA) JMP_RD > 272.0?</p> <pre> graph TD A["2.2 n=6"] --> B["JMP_RD > 305.5?"] A --> C["1.8 n=4"] B --> D["1.5 n=15"] B --> E["1.8 n=4"] </pre>
<p>Relative' (ArrayB→ArrayA) LAT_RD > 6.5?</p> <pre> graph TD A["2.2 n=6"] --> B["BW > 1.1?"] A --> C["QDEP_WR > 24.0?"] B --> D["1.6 n=7"] B --> E["1.5 n=8"] C --> F["1.4 n=4"] C --> G["1.5 n=8"] </pre>	<p>Relative' (ArrayC→ArrayA)</p> <pre> graph TD A["JMP_RD > 245.0?"] --> B["2.2 n=7"] A --> C["1.5 n=18"] </pre>
<p>Relative' (ArrayD→ArrayA) JMP_RD > 272.0?</p> <pre> graph TD A["2.2 n=6"] --> B["JMP_RD > 305.5?"] A --> C["1.8 n=4"] B --> D["1.5 n=15"] B --> E["1.8 n=4"] </pre>	<p>Relative Fitness (ArrayB→ArrayA)</p> <pre> graph TD A["LAT_RD > 6.5?"] --> B["1.7 n=6"] A --> C["1.5 n=19"] </pre>
<p>Relative Fitness (ArrayC→ArrayA)</p> <pre> graph TD A["LAT_WR > 20.5?"] --> B["0.7 n=11"] A --> C["0.9 n=14"] </pre>	<p>Relative Fitness (ArrayD→ArrayA)</p> <pre> graph TD A["WRSZ > 7.9?"] --> B["2.5 n=1"] A --> C["LAT > 1.9?"] C --> D["0.6 n=14"] C --> E["QDEP_WR > 40.3?"] E --> F["0.7 n=9"] E --> G["1.2 n=1"] </pre>

Table G.1: Bandwidth models of ArrayA.

<p>Absolute (ArrayB→ArrayB)</p> <pre> graph TD A["JMP_RD > 256.5?"] --> B["1.3 n=10"] A --> C["1.0 n=15"] </pre>	<p>Relative (ArrayA→ArrayB)</p> <pre> graph TD A["JMP_RD > 261.0?"] --> B["1.3 n=9"] A --> C["JMP_RD > 312.0?"] C --> D["1.1 n=9"] C --> E["0.9 n=7"] </pre>
<p>Relative (ArrayC→ArrayB)</p> <pre> graph TD A["JMP_RD > 263.0?"] --> B["1.3 n=9"] A --> C["RDSZ > 8.1?"] C --> D["0.9 n=9"] C --> E["1.1 n=7"] </pre>	<p>Relative (ArrayD→ArrayB)</p> <pre> graph TD A["JMP_RD > 305.5?"] --> B["QDEP_WR > 5.6?"] A --> C["RDSZ > 8.1?"] B --> D["1.1 n=1"] B --> E["1.3 n=9"] C --> F["0.9 n=9"] C --> G["1.1 n=6"] </pre>
<p>Relative' (ArrayA→ArrayB)</p> <pre> graph TD A["BW > 1.6?"] --> B["JMP_RD > 313.5?"] A --> C["JMP_RD > 264.5?"] B --> D["1.0 n=6"] B --> E["0.9 n=6"] C --> F["1.3 n=9"] C --> G["1.2 n=4"] </pre>	<p>Relative' (ArrayC→ArrayB)</p> <pre> graph TD A["JMP_RD > 263.0?"] --> B["1.3 n=9"] A --> C["RDSZ > 8.1?"] C --> D["0.9 n=9"] C --> E["1.1 n=7"] </pre>
<p>Relative' (ArrayD→ArrayB)</p> <pre> graph TD A["JMP_RD > 305.5?"] --> B["QDEP_WR > 5.6?"] A --> C["RDSZ > 8.1?"] B --> D["1.1 n=1"] B --> E["1.3 n=9"] C --> F["0.9 n=9"] C --> G["1.1 n=6"] </pre>	<p>Relative Fitness (ArrayA→ArrayB)</p> <pre> graph TD A["JMP_RD > 214.0?"] --> B["0.6 n=6"] A --> C["0.7 n=19"] </pre>
<p>Relative Fitness (ArrayC→ArrayB)</p> <pre> graph TD A["BW > 1.9?"] --> B["WR > 0.1?"] A --> C["RDSZ > 8.1?"] B --> D["1.0 n=1"] B --> E["0.7 n=9"] C --> F["0.5 n=7"] C --> G["0.6 n=8"] </pre>	<p>Relative Fitness (ArrayD→ArrayB)</p> <pre> graph TD A["WRSZ > 7.9?"] --> B["1.6 n=1"] A --> C["BW > 2.5?"] C --> D["0.5 n=10"] C --> E["WRSZ > 8.8?"] E --> F["0.5 n=5"] E --> G["0.4 n=9"] </pre>

Table G.2: Bandwidth models of ArrayB.

<p>Absolute (ArrayC→ArrayC)</p> <pre> graph TD A["JMP_RD > 301.0?"] --> B["2.1 n=16"] A --> C["1.8 n=9"] </pre>	<p>Relative (ArrayA→ArrayC)</p> <pre> graph TD A["WRSZ > 8.1?"] --> B["1.5 n=2"] A --> C["JMP_RD > 261.0?"] C --> D["2.2 n=8"] C --> E["WRSZ > 8.5?"] E --> F["1.8 n=6"] E --> G["2.0 n=9"] </pre>
<p>Relative (ArrayB→ArrayC)</p> <pre> graph TD A["RDSZ > 8.0?"] --> B["1.5 n=2"] A --> C["RDSZ > 8.1?"] C --> D["QDEP_WR > 27.3?"] C --> E["1.8 n=8"] D --> F["2.0 n=5"] D --> G["2.2 n=10"] </pre>	<p>Relative (ArrayD→ArrayC)</p> <pre> graph TD A["QDEP_WR > 8.3?"] --> B["2.1 n=12"] A --> C["RDSZ > 8.2?"] C --> D["RDSZ > 8.1?"] C --> E["2.4 n=3"] D --> F["1.5 n=5"] D --> G["1.9 n=5"] </pre>
<p>Relative' (ArrayA→ArrayC)</p> <pre> graph TD A["WRSZ > 8.1?"] --> B["1.5 n=2"] A --> C["JMP_RD > 261.0?"] C --> D["2.2 n=8"] C --> E["WRSZ > 8.5?"] E --> F["1.8 n=6"] E --> G["2.0 n=9"] </pre>	<p>Relative' (ArrayB→ArrayC)</p> <pre> graph TD A["LAT_WR > 92.4?"] --> B["WRSZ > 8.3?"] A --> C["2.2 n=8"] B --> D["1.6 n=6"] B --> E["RDSZ > 8.0?"] E --> F["2.1 n=6"] E --> G["1.9 n=5"] </pre>
<p>Relative' (ArrayD→ArrayC)</p> <pre> graph TD A["BW > 2.0?"] --> B["1.5 n=4"] A --> C["BW > 2.8?"] C --> D["LAT_RD > 1.9?"] C --> E["2.4 n=3"] D --> F["2.1 n=8"] D --> G["1.9 n=10"] </pre>	<p>Relative Fitness (ArrayA→ArrayC)</p> <pre> graph TD A["LAT_RD > 4.6?"] --> B["WR > 0.1?"] A --> C["1.5 n=7"] B --> D["0.8 n=2"] B --> E["WRSZ > 8.5?"] E --> F["1.1 n=10"] E --> G["1.3 n=6"] </pre>
<p>Relative Fitness (ArrayB→ArrayC)</p> <pre> graph TD A["LAT_RD > 7.8?"] --> B["1.7 n=17"] A --> C["2.1 n=8"] </pre>	<p>Relative Fitness (ArrayD→ArrayC)</p> <pre> graph TD A["WRSZ > 7.9?"] --> B["1.5 n=1"] A --> C["JMP_WR > 172.5?"] C --> D["RDSZ > 8.2?"] C --> E["0.9 n=3"] D --> F["0.8 n=17"] D --> G["0.7 n=4"] </pre>

Table G.3: Bandwidth models of ArrayC.

<p>Absolute (ArrayD→ArrayD) WRSZ > 7.9?</p> <pre> graph TD A["0.9 n=1"] --> B["QDEP_WR > 12.2?"] A --> C["1.9 n=3"] B --> D["RDSZ > 8.0?"] B --> C D --> E["1.8 n=1"] D --> F["2.6 n=20"] </pre>	<p>Relative (ArrayA→ArrayD) WR > 0.0?</p> <pre> graph TD A["0.9 n=1"] --> B["WRSZ > 8.3?"] A --> C["2.2 n=6"] B --> D["WR > 0.1?"] B --> C D --> E["2.0 n=1"] D --> F["2.6 n=17"] </pre>
<p>Relative (ArrayB→ArrayD) WRSZ > 8.2?</p> <pre> graph TD A["1.9 n=5"] --> B["2.6 n=20"] </pre>	<p>Relative (ArrayC→ArrayD) WRSZ > 8.3?</p> <pre> graph TD A["1.9 n=6"] --> B["QDEP_WR > 25.5?"] A --> C["2.0 n=1"] B --> D["JMP_WR > 120.5?"] B --> C D --> E["2.5 n=16"] D --> F["2.8 n=2"] </pre>
<p>Relative' (ArrayA→ArrayD) WR > 0.0?</p> <pre> graph TD A["0.9 n=1"] --> B["WRSZ > 8.3?"] A --> C["2.2 n=6"] B --> D["WR > 0.1?"] B --> C D --> E["2.0 n=1"] D --> F["2.6 n=17"] </pre>	<p>Relative' (ArrayB→ArrayD) WRSZ > 8.2?</p> <pre> graph TD A["1.9 n=5"] --> B["2.6 n=20"] </pre>
<p>Relative' (ArrayC→ArrayD) BW > 1.6?</p> <pre> graph TD A["1.9 n=4"] --> B["LAT > 7.0?"] A --> C["2.2 n=3"] B --> D["JMP_WR > 119.5?"] B --> C D --> E["2.5 n=15"] D --> F["2.8 n=3"] </pre>	<p>Relative Fitness (ArrayA→ArrayD) WR > 0.1?</p> <pre> graph TD A["0.9 n=3"] --> B["LAT_RD > 3.1?"] A --> C["1.3 n=9"] B --> D["1.7 n=9"] B --> E["1.9 n=4"] C --> D C --> E </pre>
<p>Relative Fitness (ArrayB→ArrayD) LAT_RD > 7.8?</p> <pre> graph TD A["0.6 n=1"] --> B["WR > 0.0?"] A --> C["2.6 n=8"] B --> D["WR > 0.0?"] B --> C D --> E["1.4 n=1"] D --> F["2.1 n=15"] </pre>	<p>Relative Fitness (ArrayC→ArrayD) JMP_RD > 304.0?</p> <pre> graph TD A["0.7 n=1"] --> B["WR > 0.1?"] A --> C["1.4 n=8"] B --> D["QDEP_WR > 15.6?"] B --> C D --> E["1.2 n=13"] D --> F["1.1 n=3"] </pre>

Table G.4: Bandwidth models of ArrayD.

<p>Absolute (ArrayA→ArrayA)</p> <pre> graph TD A["JMP_RD > 232.0?"] --> B["275.0 n=7"] A --> C["JMP_RD > 298.5?"] C --> D["198.0 n=8"] C --> E["180.0 n=10"] </pre>	<p>Relative (ArrayB→ArrayA)</p> <pre> graph TD A["JMP_RD > 227.0?"] --> B["275.0 n=7"] A --> C["JMP_RD > 275.0?"] C --> D["206.0 n=5"] C --> E["QDEP_WR > 24.0?"] E --> F["172.0 n=4"] E --> G["186.0 n=9"] </pre>
<p>Relative (ArrayC→ArrayA)</p> <pre> graph TD A["JMP_RD > 245.0?"] --> B["275.0 n=7"] A --> C["186.0 n=18"] </pre>	<p>Relative (ArrayD→ArrayA)</p> <pre> graph TD A["JMP_RD > 272.0?"] --> B["279.0 n=6"] A --> C["186.0 n=19"] </pre>
<p>Relative' (ArrayB→ArrayA)</p> <pre> graph TD A["LAT_RD > 6.5?"] --> B["279.0 n=6"] A --> C["BW > 1.1?"] C --> D["QDEP_WR > 24.0?"] C --> E["204.0 n=7"] D --> F["172.0 n=4"] D --> G["186.0 n=8"] </pre>	<p>Relative' (ArrayC→ArrayA)</p> <pre> graph TD A["JMP_RD > 245.0?"] --> B["275.0 n=7"] A --> C["186.0 n=18"] </pre>
<p>Relative' (ArrayD→ArrayA)</p> <pre> graph TD A["JMP_RD > 272.0?"] --> B["279.0 n=6"] A --> C["186.0 n=19"] </pre>	<p>Relative Fitness (ArrayB→ArrayA)</p> <pre> graph TD A["LAT_RD > 6.5?"] --> B["1.7 n=6"] A --> C["1.5 n=19"] </pre>
<p>Relative Fitness (ArrayC→ArrayA)</p> <pre> graph TD A["LAT_WR > 20.3?"] --> B["0.7 n=11"] A --> C["0.9 n=14"] </pre>	<p>Relative Fitness (ArrayD→ArrayA)</p> <pre> graph TD A["WRSZ > 7.9?"] --> B["2.5 n=1"] A --> C["LAT > 1.9?"] C --> D["0.6 n=14"] C --> E["QDEP_WR > 40.3?"] E --> F["0.8 n=9"] E --> G["1.2 n=1"] </pre>

Table G.5: Throughput models of ArrayA.

<p>Absolute (ArrayB→ArrayB) JMP_RD > 256.5?</p> <pre> graph TD A["JMP_RD > 256.5?"] --> B["WR > 0.0?"] A --> C["JMP_RD > 305.0?"] B --> D["180.0 n=2"] B --> E["158.0 n=8"] C --> F["129.0 n=9"] C --> G["117.0 n=6"] </pre>	<p>Relative (ArrayA→ArrayB) JMP_RD > 264.5?</p> <pre> graph TD A["JMP_RD > 264.5?"] --> B["159.0 n=9"] A --> C["127.0 n=16"] </pre>
<p>Relative (ArrayC→ArrayB) JMP_RD > 263.0?</p> <pre> graph TD A["JMP_RD > 263.0?"] --> B["159.0 n=9"] A --> C["127.0 n=16"] </pre>	<p>Relative (ArrayD→ArrayB) JMP_RD > 305.5?</p> <pre> graph TD A["JMP_RD > 305.5?"] --> B["159.0 n=10"] A --> C["127.0 n=15"] </pre>
<p>Relative' (ArrayA→ArrayB) BW > 1.6?</p> <pre> graph TD A["BW > 1.6?"] --> B["JMP_RD > 313.5?"] A --> C["JMP_RD > 264.5?"] B --> D["127.0 n=6"] B --> E["117.0 n=6"] C --> F["159.0 n=9"] C --> G["147.0 n=4"] </pre>	<p>Relative' (ArrayC→ArrayB) JMP_RD > 263.0?</p> <pre> graph TD A["JMP_RD > 263.0?"] --> B["159.0 n=9"] A --> C["127.0 n=16"] </pre>
<p>Relative' (ArrayD→ArrayB) JMP_RD > 305.5?</p> <pre> graph TD A["JMP_RD > 305.5?"] --> B["159.0 n=10"] A --> C["127.0 n=15"] </pre>	<p>Relative Fitness (ArrayA→ArrayB) JMP_RD > 214.0?</p> <pre> graph TD A["JMP_RD > 214.0?"] --> B["0.6 n=6"] A --> C["0.7 n=19"] </pre>
<p>Relative Fitness (ArrayC→ArrayB) LAT_RD > 2.5?</p> <pre> graph TD A["LAT_RD > 2.5?"] --> B["RDSZ > 8.1?"] A --> C["WR > 0.1?"] B --> D["0.5 n=7"] B --> E["0.6 n=8"] C --> F["1.0 n=1"] C --> G["0.7 n=9"] </pre>	<p>Relative Fitness (ArrayD→ArrayB) WRSZ > 7.9?</p> <pre> graph TD A["WRSZ > 7.9?"] --> B["1.6 n=1"] A --> C["BW > 2.5?"] C --> D["0.5 n=10"] C --> E["WRSZ > 8.8?"] E --> F["0.5 n=5"] E --> G["0.4 n=9"] </pre>

Table G.6: Throughput models of ArrayB.

<p>Absolute (ArrayC→ArrayC)</p> <pre> graph TD A["JMP_RD > 301.0?"] --> B["265.0 n=17"] A --> C["211.0 n=8"] </pre>	<p>Relative (ArrayA→ArrayC)</p> <pre> graph TD A["WRSZ > 8.1?"] --> B["192.0 n=2"] A --> C["JMP_RD > 264.5?"] C --> D["273.0 n=8"] C --> E["WRSZ > 8.5?"] E --> F["211.0 n=6"] E --> G["257.0 n=9"] </pre>
<p>Relative (ArrayB→ArrayC)</p> <pre> graph TD A["RDSZ > 8.1?"] --> B["RDSZ > 8.0?"] A --> C["225.0 n=8"] B --> D["192.0 n=2"] B --> E["QDEP_WR > 27.3?"] E --> F["248.0 n=5"] E --> G["273.0 n=10"] </pre>	<p>Relative (ArrayD→ArrayC)</p> <pre> graph TD A["WR > 0.1?"] --> B["192.0 n=2"] A --> C["JMP_RD > 305.5?"] C --> D["269.0 n=9"] C --> E["WRSZ > 8.8?"] E --> F["205.0 n=5"] E --> G["257.0 n=9"] </pre>
<p>Relative' (ArrayA→ArrayC)</p> <pre> graph TD A["WRSZ > 8.1?"] --> B["192.0 n=2"] A --> C["JMP_RD > 264.5?"] C --> D["273.0 n=8"] C --> E["WRSZ > 8.5?"] E --> F["211.0 n=6"] E --> G["257.0 n=9"] </pre>	<p>Relative' (ArrayB→ArrayC)</p> <pre> graph TD A["RDSZ > 8.1?"] --> B["RDSZ > 8.0?"] A --> C["225.0 n=8"] B --> D["192.0 n=2"] B --> E["IOPS > 157.5?"] E --> F["265.0 n=11"] E --> G["294.0 n=4"] </pre>
<p>Relative' (ArrayD→ArrayC)</p> <pre> graph TD A["BW > 2.0?"] --> B["192.0 n=4"] A --> C["261.0 n=21"] </pre>	<p>Relative Fitness (ArrayA→ArrayC)</p> <pre> graph TD A["WRSZ > 8.5?"] --> B["WR > 0.1?"] A --> C["RDSZ > 8.1?"] B --> D["0.8 n=2"] B --> E["1.1 n=12"] C --> F["1.5 n=6"] C --> G["1.2 n=5"] </pre>
<p>Relative Fitness (ArrayB→ArrayC)</p> <pre> graph TD A["LAT_RD > 7.8?"] --> B["1.7 n=17"] A --> C["2.1 n=8"] </pre>	<p>Relative Fitness (ArrayD→ArrayC)</p> <pre> graph TD A["WRSZ > 7.9?"] --> B["1.5 n=1"] A --> C["LAT_WR > 0.9?"] C --> D["0.7 n=3"] C --> E["LAT_RD > 1.9?"] E --> F["0.9 n=7"] E --> G["0.8 n=14"] </pre>

Table G.7: Throughput models of ArrayC.

<p>Absolute (ArrayD→ArrayD) WRSZ > 7.9?</p> <pre> graph TD A["110.0 n=1"] --> B["QDEP_WR > 11.7?"] B --> C["JMP_RD > 285.0?"] B --> D["250.0 n=4"] C --> E["343.0 n=4"] C --> F["314.0 n=16"] </pre>	<p>Relative (ArrayA→ArrayD) WR > 0.0?</p> <pre> graph TD A["110.0 n=1"] --> B["WRSZ > 8.3?"] B --> C["278.0 n=6"] B --> D["WR > 0.1?"] D --> E["250.0 n=1"] D --> F["316.0 n=17"] </pre>
<p>Relative (ArrayB→ArrayD)</p> <pre> graph TD A["WRSZ > 8.2?"] --> B["239.0 n=5"] A --> C["316.0 n=20"] </pre>	<p>Relative (ArrayC→ArrayD) WRSZ > 8.3?</p> <pre> graph TD A["241.0 n=6"] --> B["QDEP_WR > 25.5?"] B --> C["JMP_WR > 120.5?"] B --> D["250.0 n=1"] C --> E["316.0 n=16"] C --> F["343.0 n=2"] </pre>
<p>Relative' (ArrayA→ArrayD) WR > 0.0?</p> <pre> graph TD A["110.0 n=1"] --> B["WRSZ > 8.3?"] B --> C["278.0 n=6"] B --> D["WR > 0.1?"] D --> E["250.0 n=1"] D --> F["316.0 n=17"] </pre>	<p>Relative' (ArrayB→ArrayD)</p> <pre> graph TD A["WRSZ > 8.2?"] --> B["239.0 n=5"] A --> C["LAT_RD > 6.5?"] C --> D["343.0 n=3"] C --> E["314.0 n=17"] </pre>
<p>Relative' (ArrayC→ArrayD) BW > 1.6?</p> <pre> graph TD A["239.0 n=4"] --> B["JMP_WR > 119.5?"] B --> C["LAT_WR > 25.4?"] B --> D["343.0 n=3"] C --> E["316.0 n=15"] C --> F["278.0 n=3"] </pre>	<p>Relative Fitness (ArrayA→ArrayD)</p> <pre> graph TD A["WR > 0.1?"] --> B["LAT_RD > 3.1?"] A --> C["LAT > 6.8?"] B --> D["0.8 n=3"] B --> E["1.3 n=9"] C --> F["1.7 n=9"] C --> G["1.8 n=4"] </pre>
<p>Relative Fitness (ArrayB→ArrayD) LAT_RD > 7.8?</p> <pre> graph TD A["WR > 0.0?"] --> B["0.6 n=1"] A --> C["WR > 0.0?"] C --> D["1.4 n=1"] C --> E["2.1 n=15"] F["2.6 n=8"] </pre>	<p>Relative Fitness (ArrayC→ArrayD) JMP_RD > 288.5?</p> <pre> graph TD A["WR > 0.1?"] --> B["0.7 n=1"] A --> C["QDEP_WR > 14.8?"] C --> D["1.2 n=8"] C --> E["1.1 n=3"] F["RDSZ > 8.1?"] --> G["1.2 n=6"] F --> H["1.4 n=7"] </pre>

Table G.8: Throughput models of ArrayD.

<p>Absolute (ArrayA→ArrayA)</p> <pre> graph TD A[WR > 0.1?] --> B[3.9 n=5] A --> C[6.3 n=20] </pre>	<p>Relative (ArrayB→ArrayA)</p> <pre> graph TD A[WRSZ > 8.1?] --> B[3.7 n=3] A --> C[QDEP_WR > 26.3?] C --> D[6.4 n=13] C --> E[5.6 n=9] </pre>
<p>Relative (ArrayC→ArrayA)</p> <pre> graph TD A[JMP_WR > 96.0?] --> B[RDSZ > 8.0?] A --> C[3.9 n=4] B --> D[6.8 n=6] B --> E[RDSZ > 8.2?] E --> F[5.7 n=9] E --> G[6.5 n=6] </pre>	<p>Relative (ArrayD→ArrayA)</p> <pre> graph TD A[QDEP_WR > 7.9?] --> B[WR > 0.1?] A --> C[5.2 n=9] B --> D[3.9 n=1] B --> E[JMP_WR > 25.5?] E --> F[5.5 n=1] E --> G[6.5 n=14] </pre>
<p>Relative' (ArrayB→ArrayA)</p> <pre> graph TD A[WRSZ > 8.1?] --> B[3.7 n=3] A --> C[QDEP_WR > 26.3?] C --> D[BW > 0.9?] C --> E[5.6 n=9] D --> F[7.0 n=3] D --> G[6.4 n=10] </pre>	<p>Relative' (ArrayC→ArrayA)</p> <pre> graph TD A[JMP_WR > 96.0?] --> B[RDSZ > 8.0?] A --> C[3.9 n=4] B --> D[6.8 n=6] B --> E[RDSZ > 8.2?] E --> F[5.7 n=9] E --> G[6.5 n=6] </pre>
<p>Relative' (ArrayD→ArrayA)</p> <pre> graph TD A[BW > 1.8?] --> B[3.7 n=3] A --> C[6.2 n=22] </pre>	<p>Relative Fitness (ArrayB→ArrayA)</p> <pre> graph TD A[LAT > 12.3?] --> B[0.6 n=4] A --> C[LAT > 18.2?] C --> D[0.4 n=9] C --> E[0.3 n=12] </pre>
<p>Relative Fitness (ArrayC→ArrayA)</p> <pre> graph TD A[WRSZ > 8.8?] --> B[QDEP_WR > 17.4?] A --> C[WR > 0.2?] B --> D[1.1 n=13] B --> E[0.6 n=2] C --> F[1.6 n=5] C --> G[1.3 n=5] </pre>	<p>Relative Fitness (ArrayD→ArrayA)</p> <pre> graph TD A[LAT_RD > 2.1?] --> B[BW > 2.8?] A --> C[2.3 n=9] B --> D[QDEP_WR > 3.9?] B --> E[2.3 n=1] D --> F[4.2 n=6] D --> G[3.8 n=9] </pre>

Table G.9: Latency models of ArrayA.

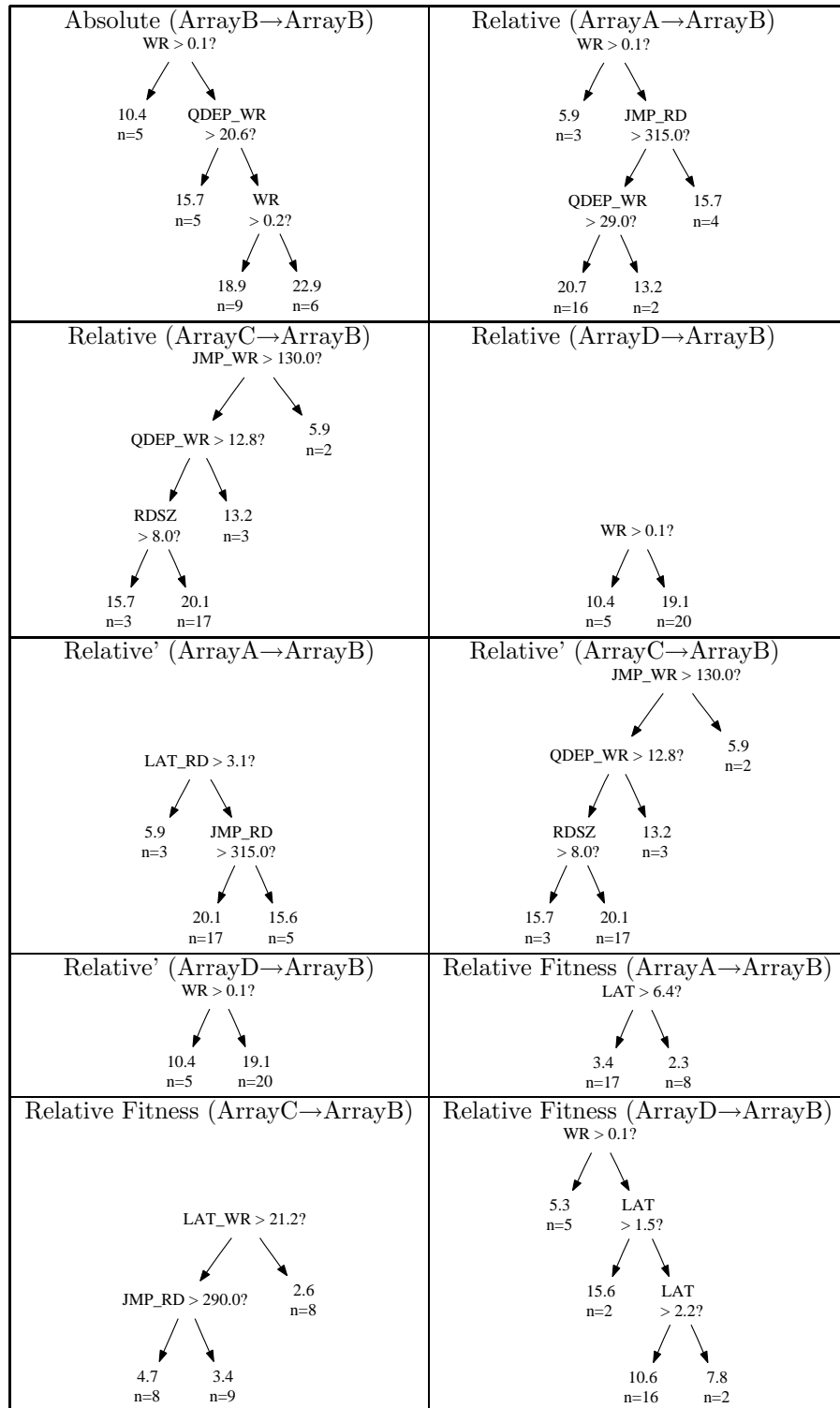


Table G.10: Latency models of ArrayB.

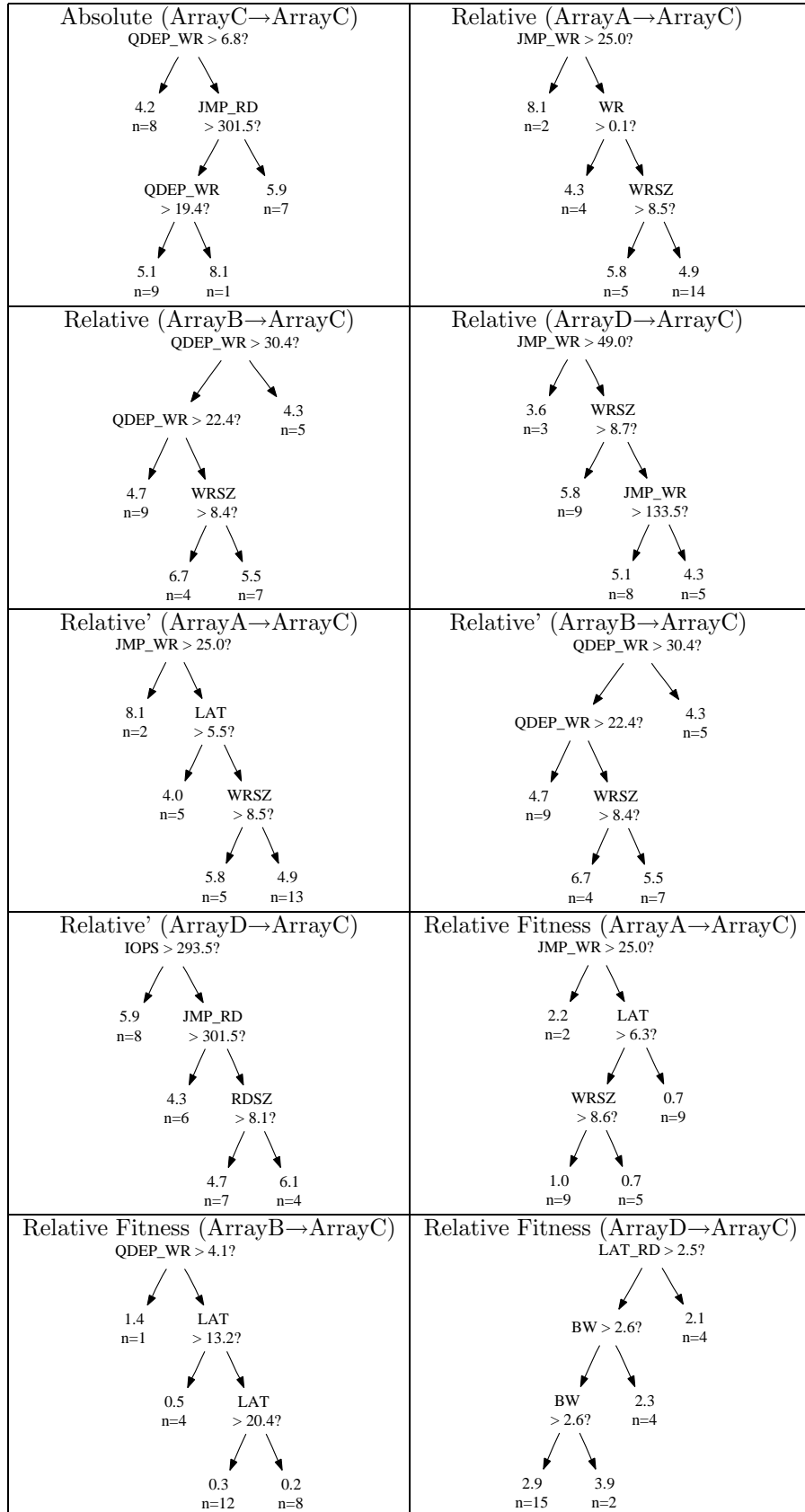


Table G.11: Latency models of ArrayC.

<p>Absolute (ArrayD→ArrayD) QDEP_WR > 8.6?</p> <pre> graph TD A["QDEP_WR > 8.6?"] --> B["1.7 n=20"] A --> C["2.6 n=5"] </pre>	<p>Relative (ArrayA→ArrayD) WR > 0.1?</p> <pre> graph TD A["WR > 0.1?"] --> B["3.2 n=3"] A --> C["1.7 n=22"] </pre>
<p>Relative (ArrayB→ArrayD) WRSZ > 8.1?</p> <pre> graph TD A["WRSZ > 8.1?"] --> B["3.2 n=3"] A --> C["QDEP_WR > 26.3?"] C --> D["WR > 0.3?"] C --> E["2.0 n=9"] D --> F["1.6 n=12"] D --> G["2.0 n=1"] </pre>	<p>Relative (ArrayC→ArrayD) JMP_WR > 130.0?</p> <pre> graph TD A["JMP_WR > 130.0?"] --> B["WR > 0.1?"] A --> C["3.4 n=2"] B --> D["2.4 n=3"] B --> E["WRSZ > 8.5?"] E --> F["2.0 n=5"] E --> G["1.6 n=15"] </pre>
<p>Relative' (ArrayA→ArrayD)</p> <pre> graph TD A["WR > 0.1?"] --> B["3.2 n=3"] A --> C["1.7 n=22"] </pre>	<p>Relative' (ArrayB→ArrayD) WRSZ > 8.1?</p> <pre> graph TD A["WRSZ > 8.1?"] --> B["3.2 n=3"] A --> C["QDEP_WR > 26.3?"] C --> D["WR > 0.3?"] C --> E["2.0 n=9"] D --> F["1.6 n=12"] D --> G["2.0 n=1"] </pre>
<p>Relative' (ArrayC→ArrayD) LAT_RD > 2.7?</p> <pre> graph TD A["LAT_RD > 2.7?"] --> B["WRSZ > 8.5?"] A --> C["2.5 n=7"] B --> D["2.0 n=4"] B --> E["WR > 0.1?"] E --> F["2.1 n=1"] E --> G["1.6 n=13"] </pre>	<p>Relative Fitness (ArrayA→ArrayD)</p> <pre> graph TD A["WR > 0.1?"] --> B["0.9 n=3"] A --> C["LAT > 6.0?"] C --> D["0.4 n=8"] C --> E["0.2 n=14"] </pre>
<p>Relative Fitness (ArrayB→ArrayD) WR > 0.0?</p> <pre> graph TD A["WR > 0.0?"] --> B["0.6 n=2"] A --> C["WR > 0.2?"] C --> D["0.1 n=7"] C --> E["0.1 n=16"] </pre>	<p>Relative Fitness (ArrayC→ArrayD) WR > 0.1?</p> <pre> graph TD A["WR > 0.1?"] --> B["1.0 n=1"] A --> C["WR > 0.2?"] C --> D["0.4 n=14"] C --> E["0.3 n=10"] </pre>

Table G.12: Latency models of ArrayD.

Appendix H

WorkloadMix models

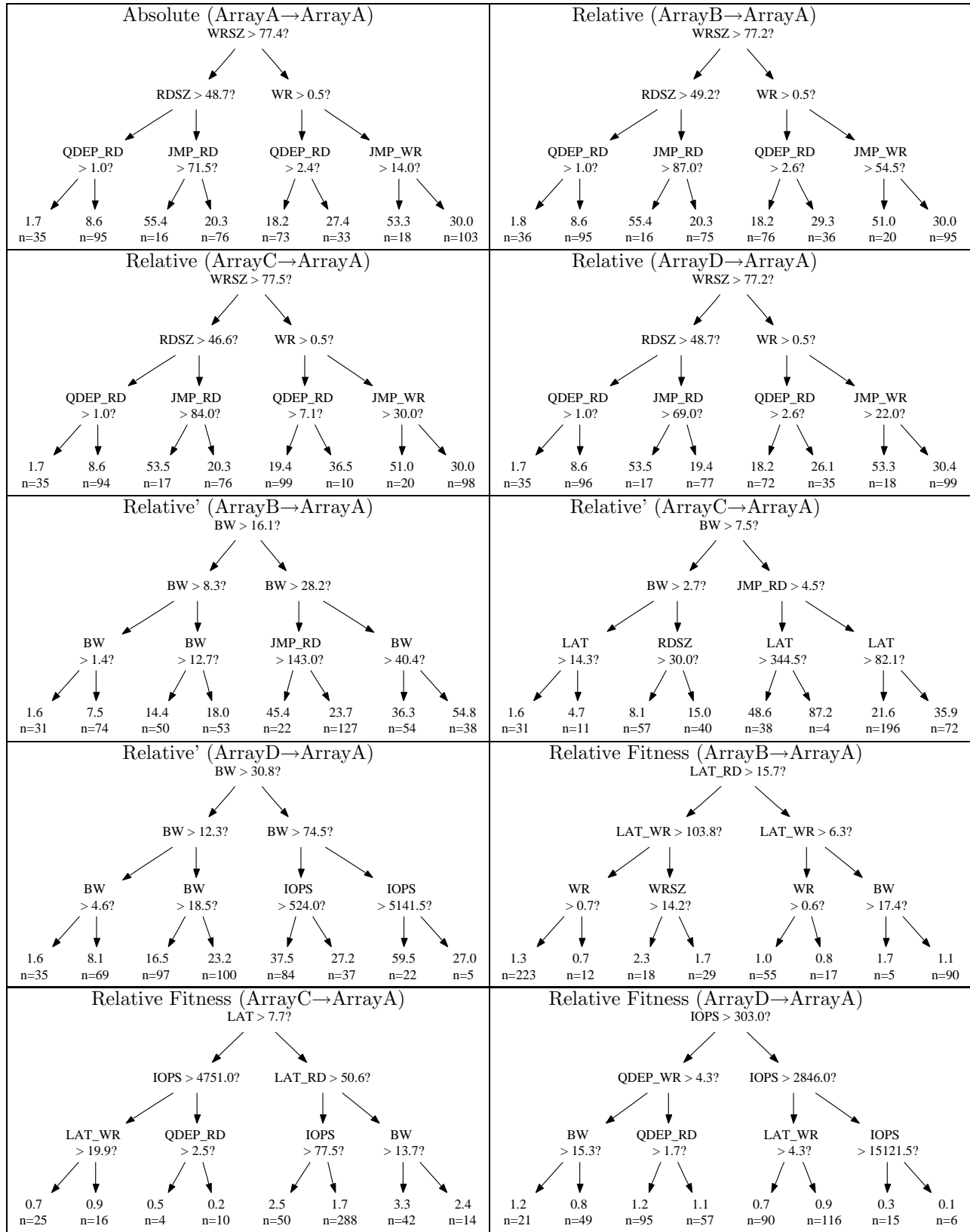


Table H.1: Bandwidth models of ArrayA.

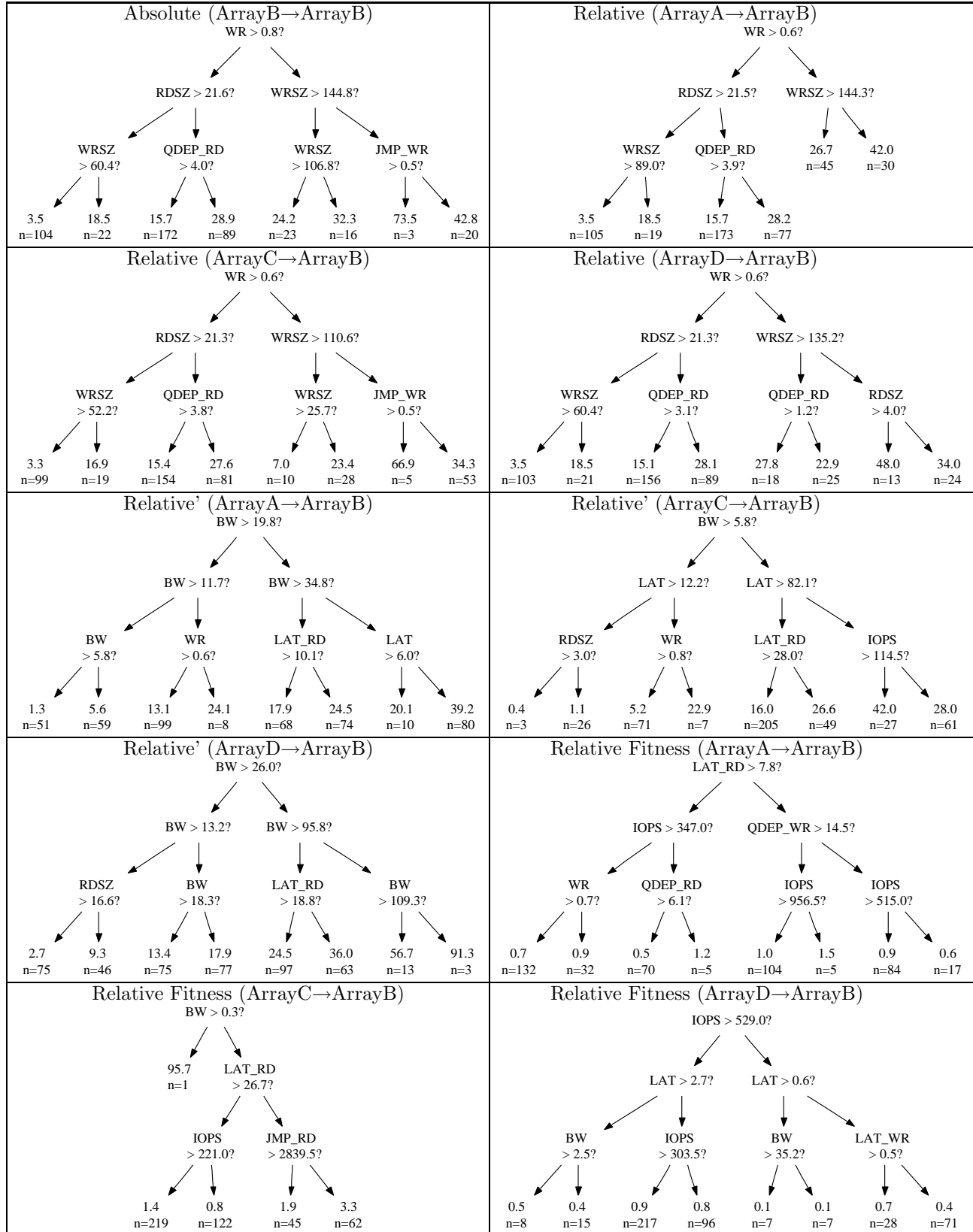


Table H.2: Bandwidth models of ArrayB.

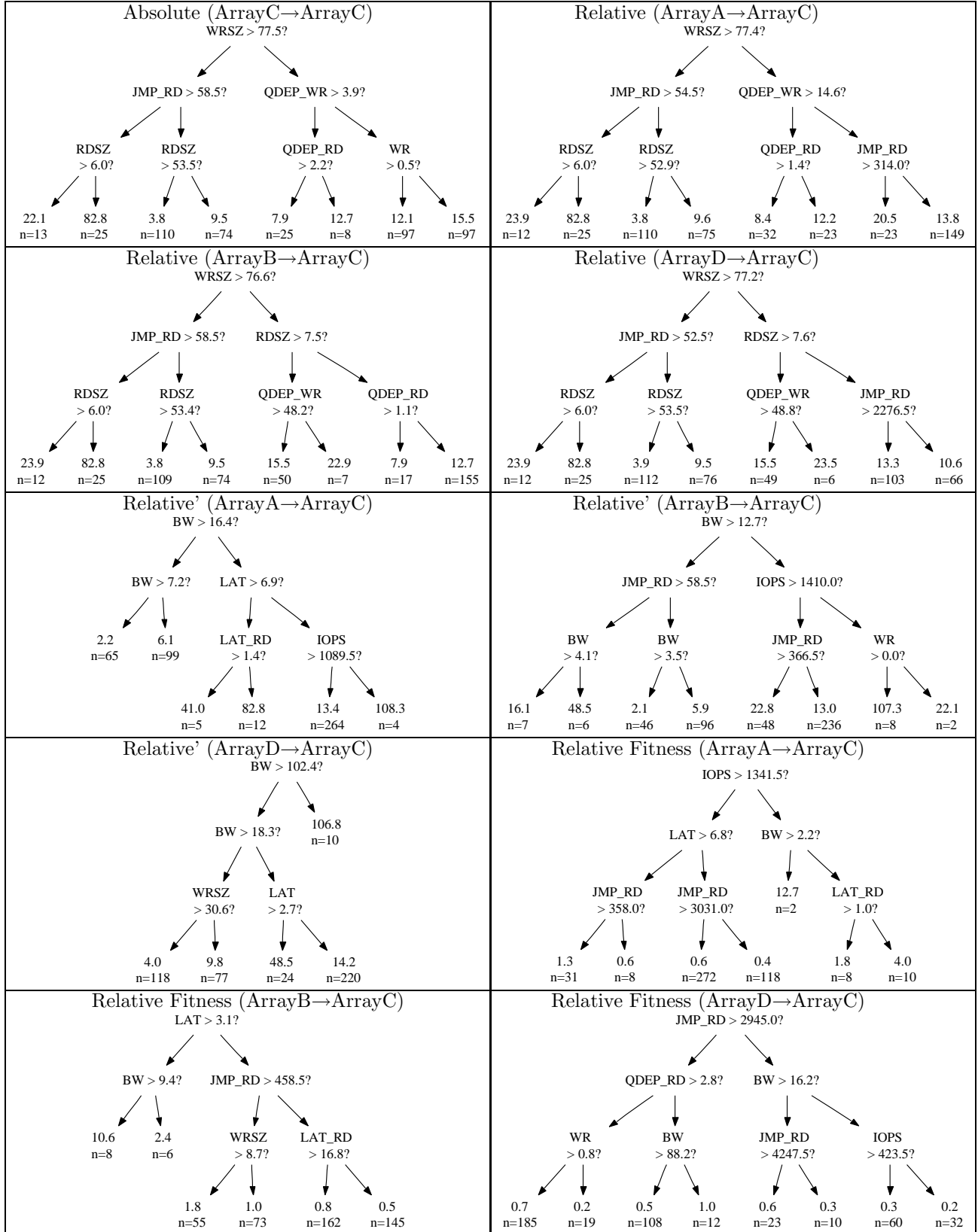


Table H.3: Bandwidth models of ArrayC.

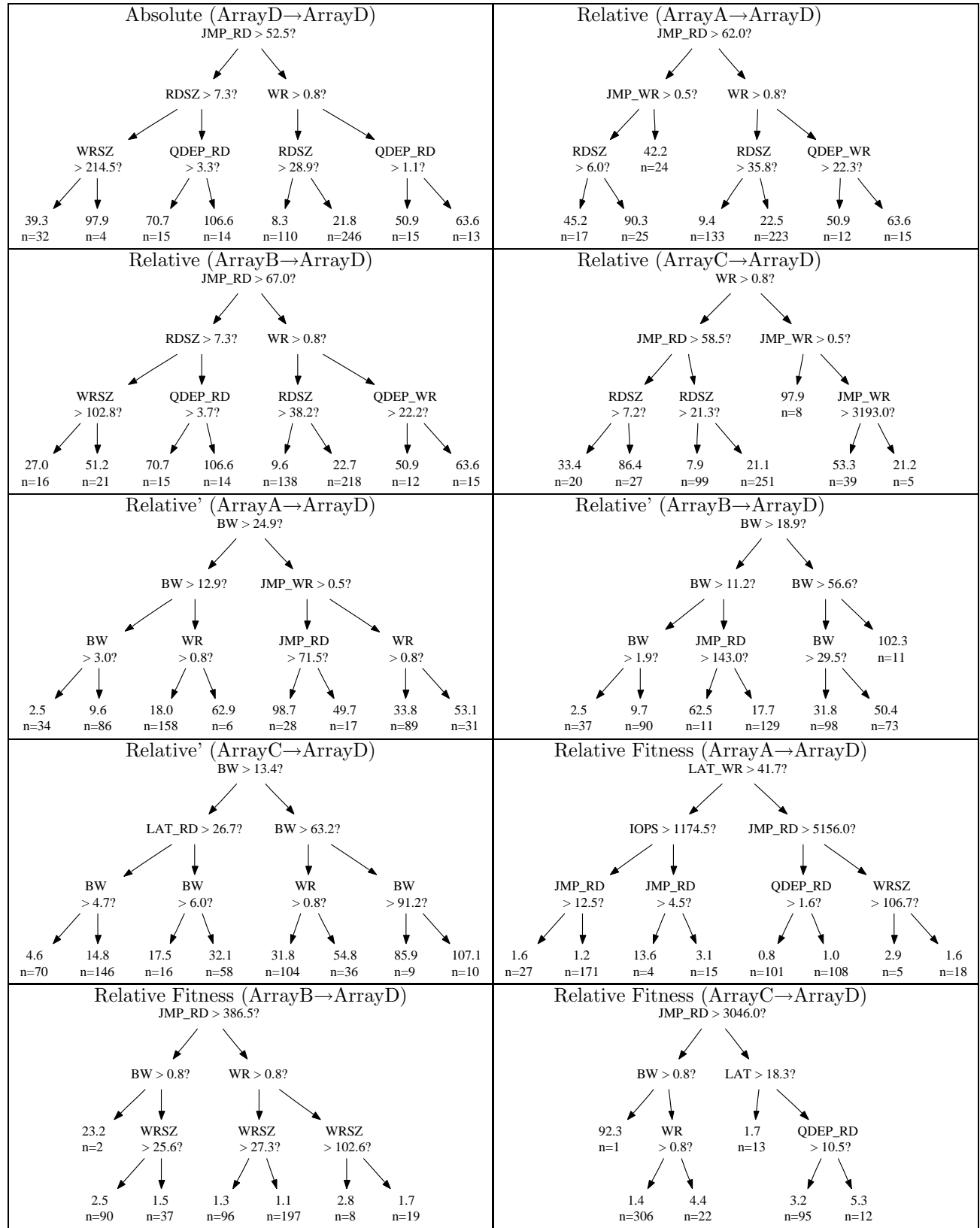


Table H.4: Bandwidth models of ArrayD.

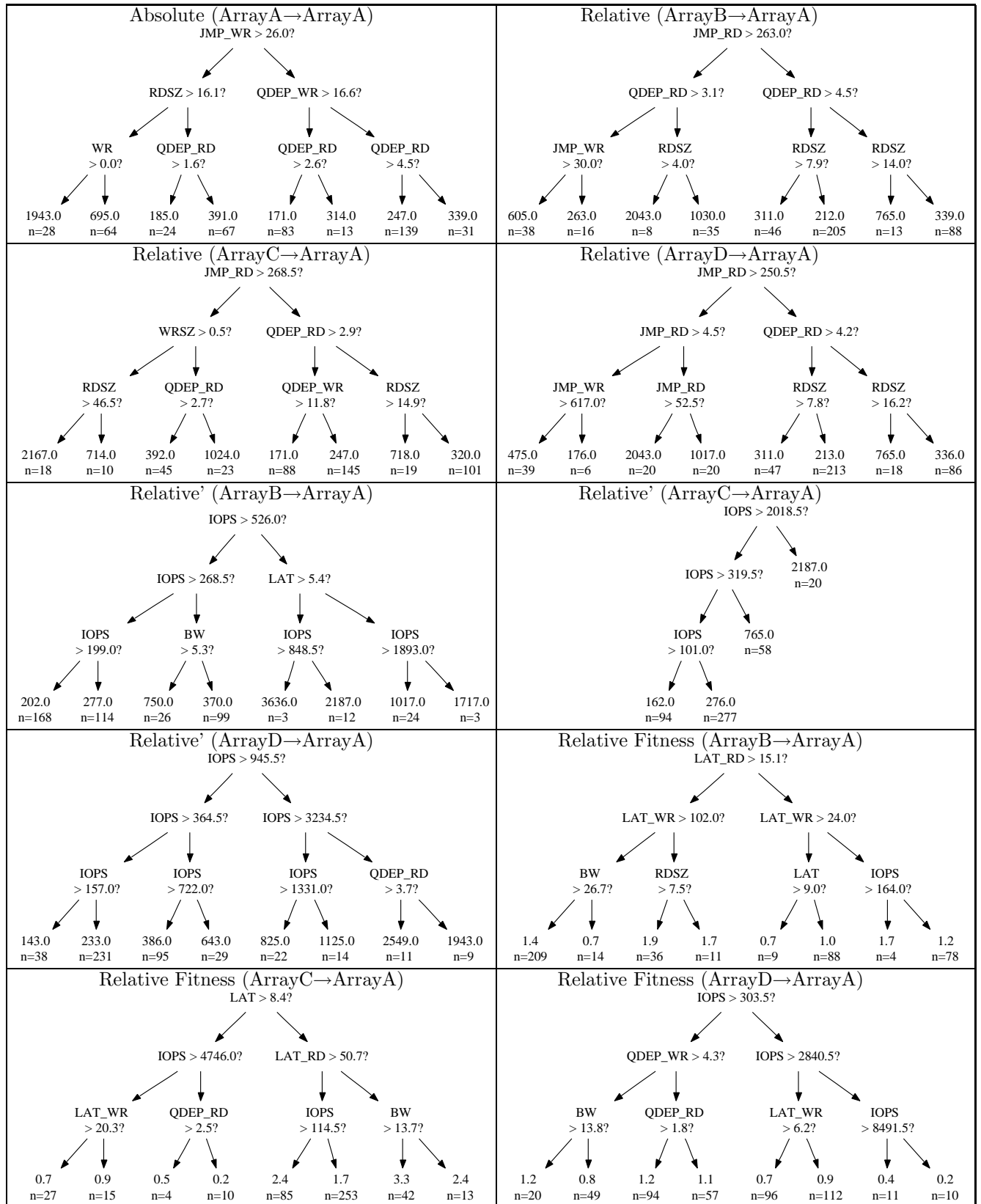


Table H.5: Throughput models of ArrayA.

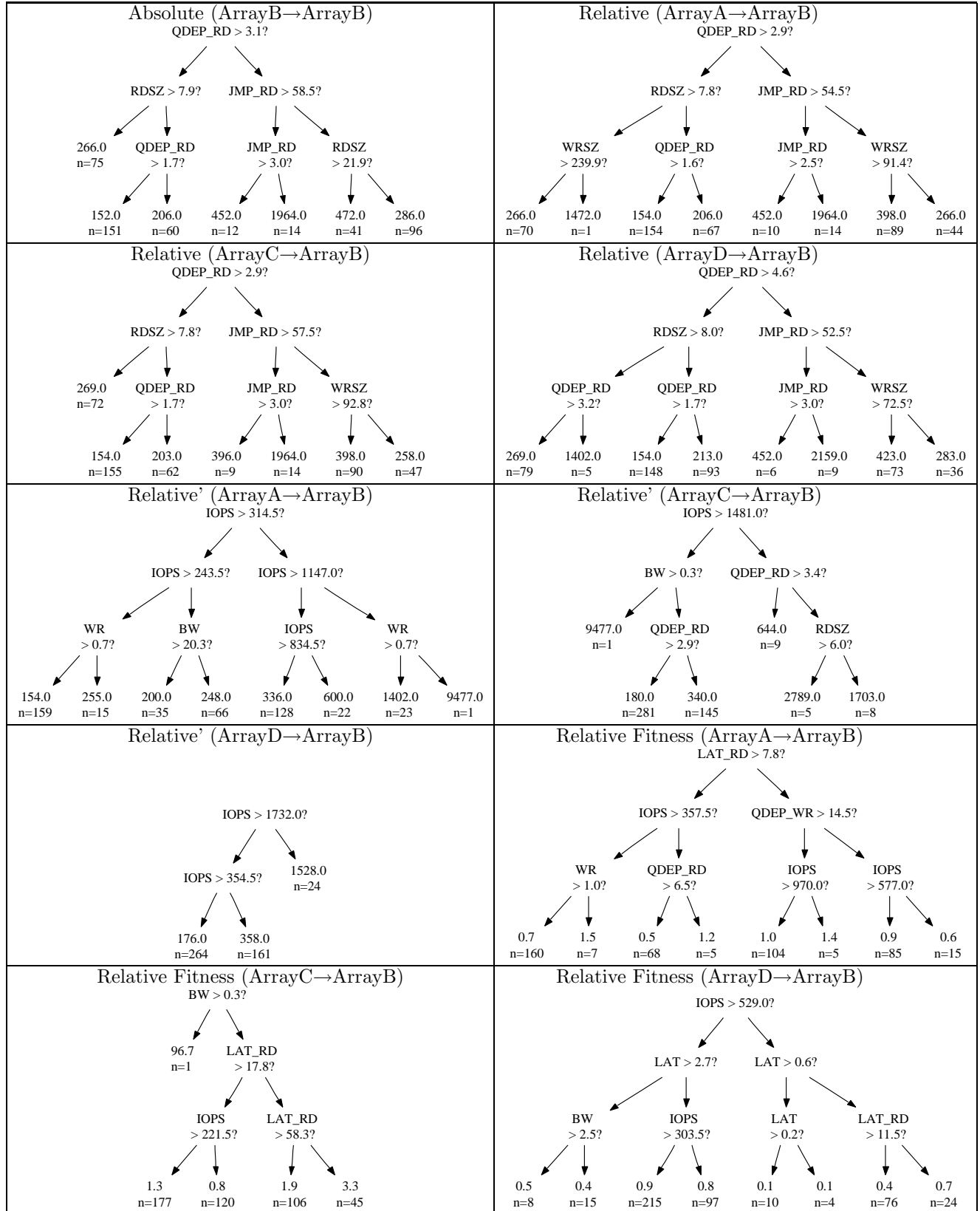


Table H.6: Throughput models of ArrayB.

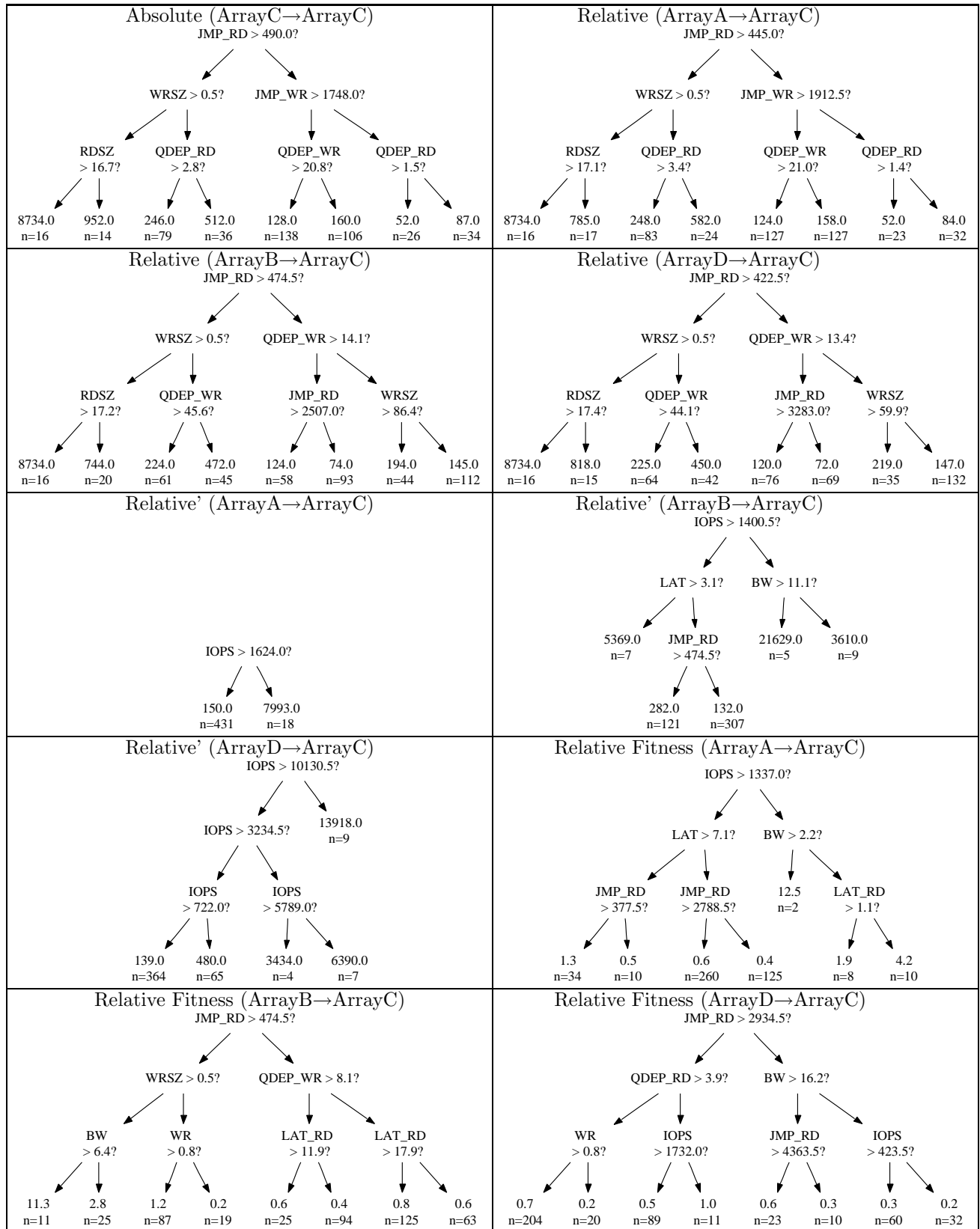


Table H.7: Throughput models of ArrayC.

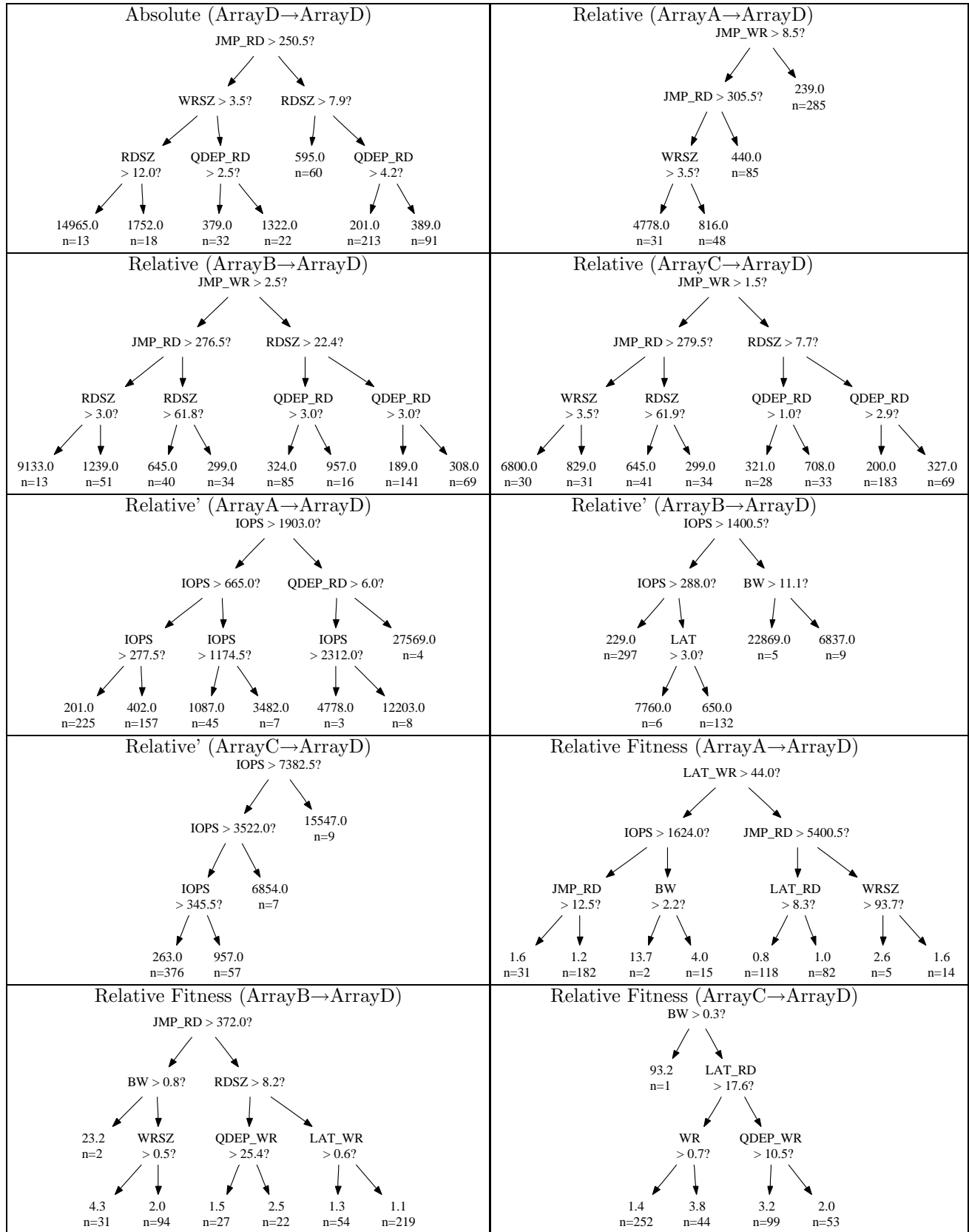


Table H.8: Throughput models of ArrayD.

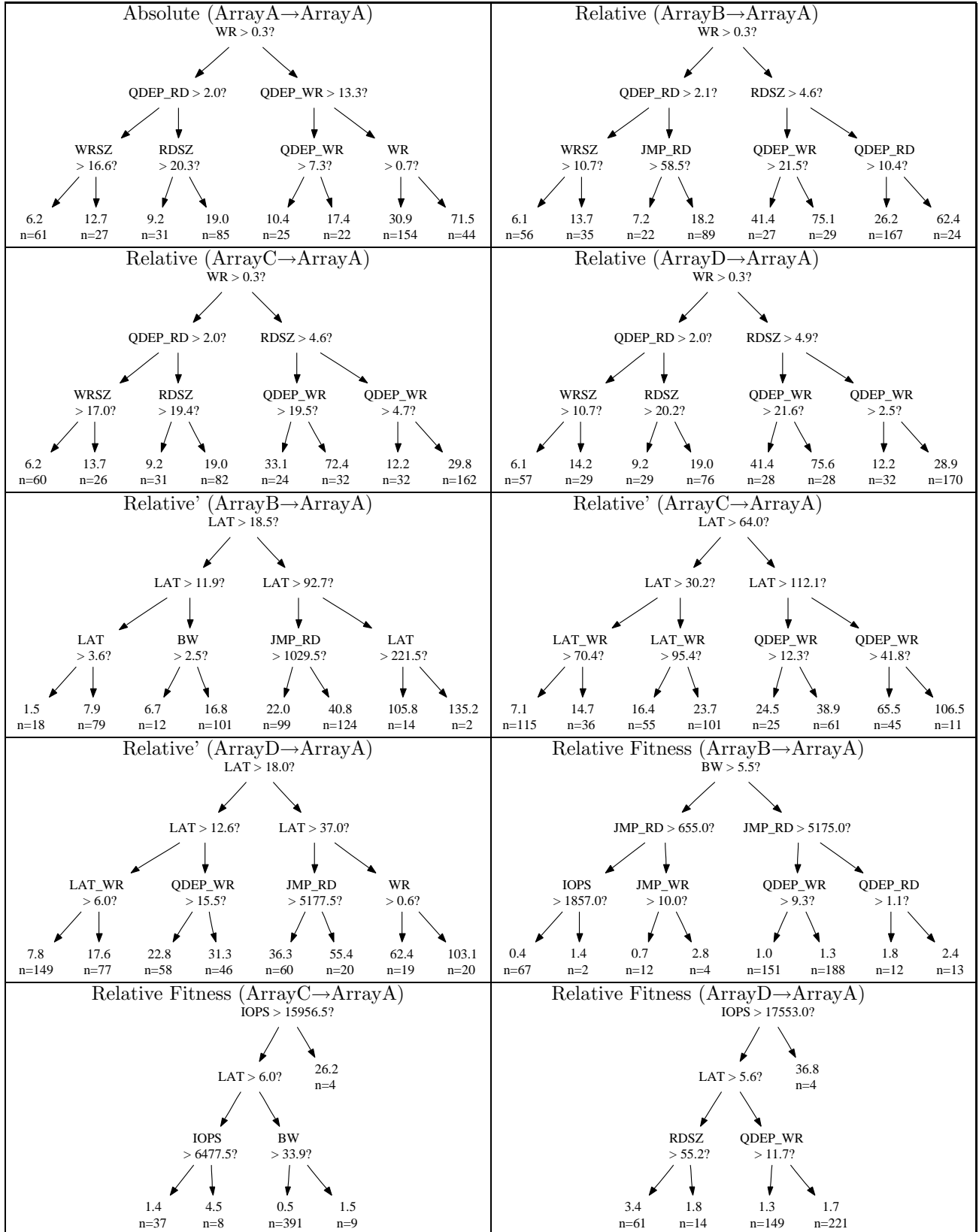


Table H.9: Latency models of ArrayA.

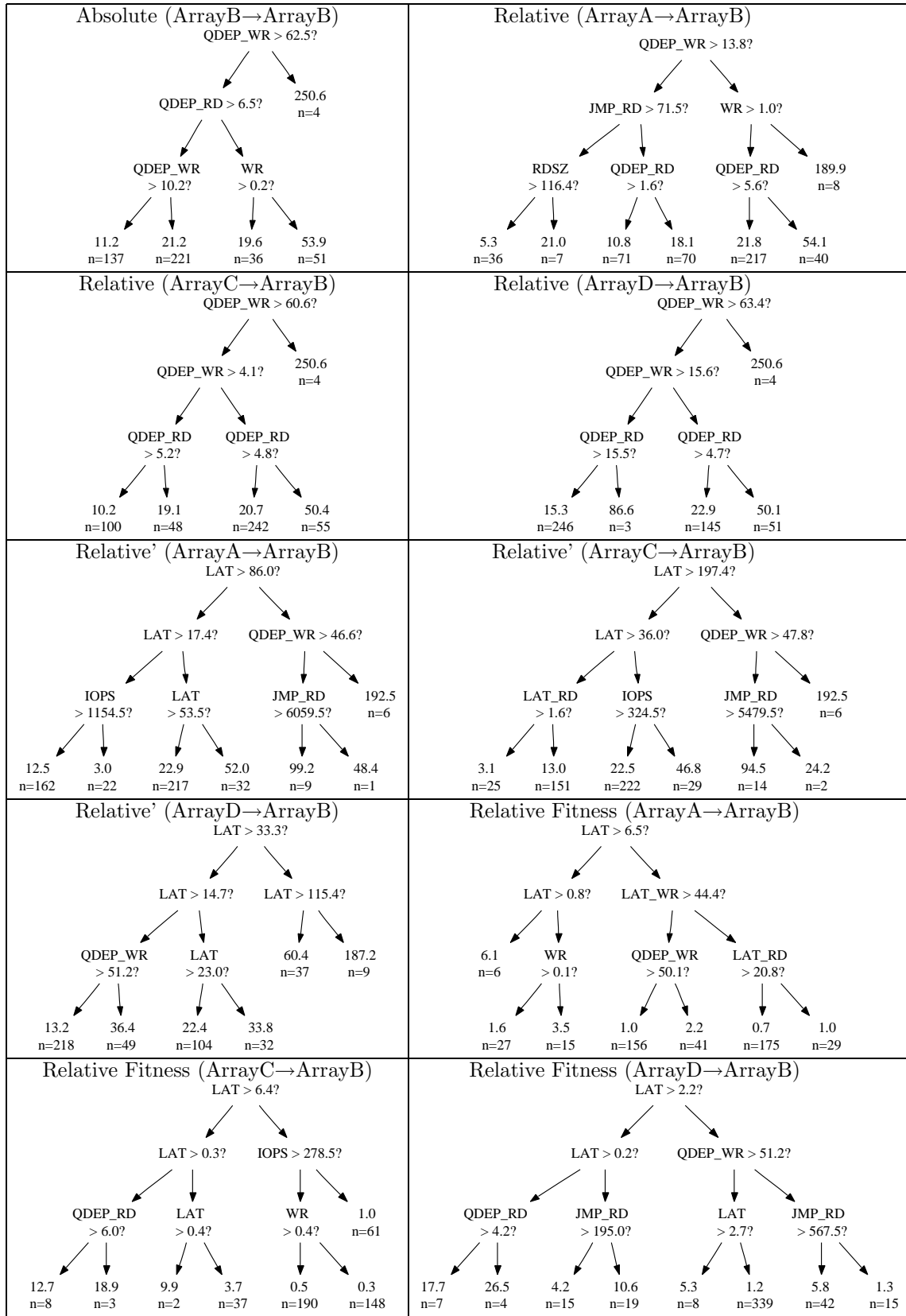


Table H.10: Latency models of ArrayB.

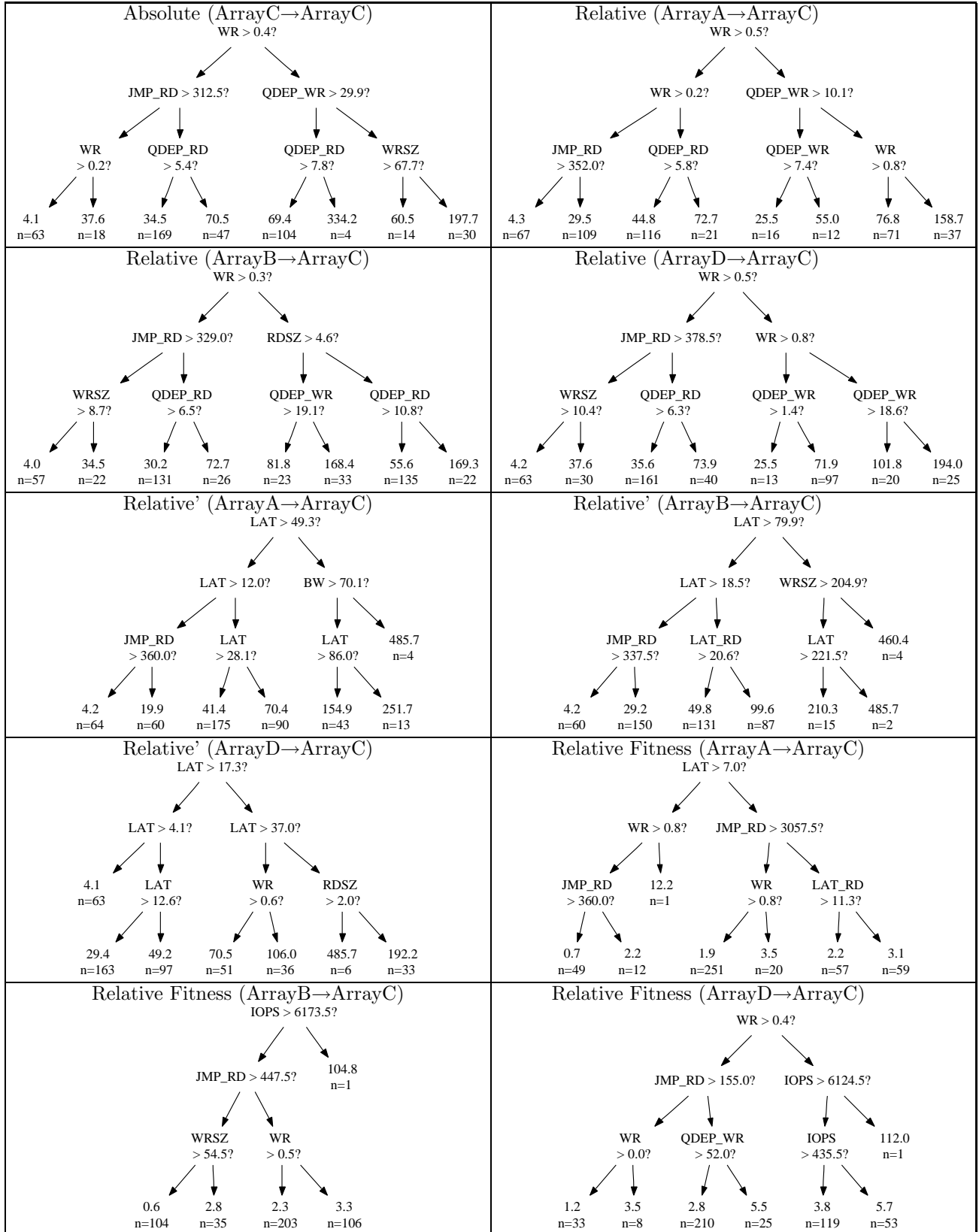


Table H.11: Latency models of ArrayC.

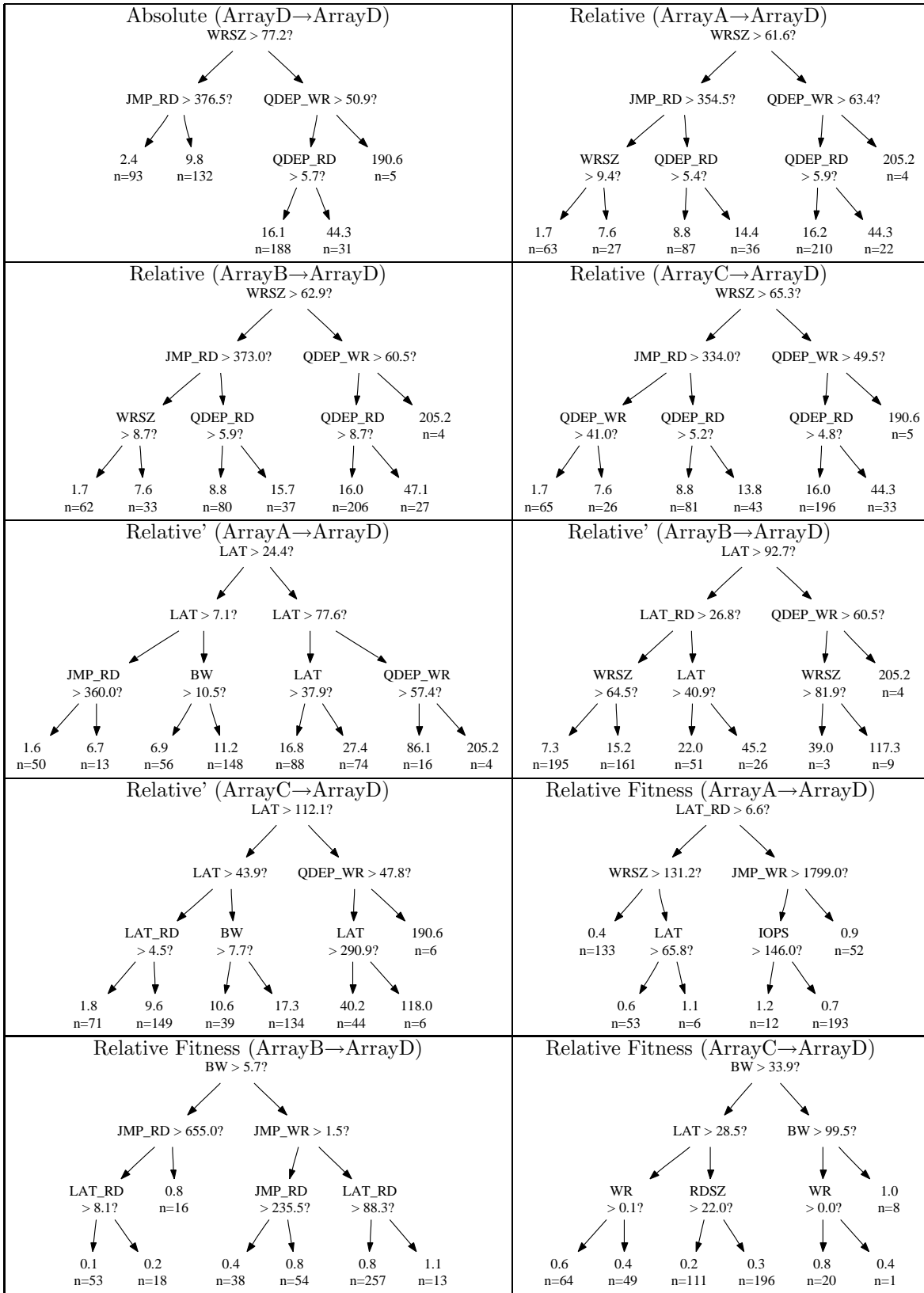


Table H.12: Latency models of ArrayD.