

Relatório — Fluxo em Redes (Caminho Mínimo)

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Resumo executivo

sim_id	n	m	neg_edges	runtime_s	dist_reachable	dist_mean	dist_max
1	10	22	7	3.980001201853156e-05	10	-6.3	39.0
1	100	1307	462	0.0003156999591737	100	-126.24	50.0
2	10	25	0	2.3500004317611456e-05	10	24.0	53.0
2	100	2549	0	0.0004203999997116	100	6.7	12.0
3	10	32	9	0.0010873999563045	10	24.6	50.0
3	100	2499	564	1.19922739994945	100	0.77	20.0

Simulação 1 — Bellman recursivo em DAG

n	m	neg_edges	runtime_s	dist_mean	dist_std
10	22	7	3.980001201853156e-05	-6.3	33.556072475782976
100	1307	462	0.0003156999591737	-126.24	90.15133055035848

Execução n=10

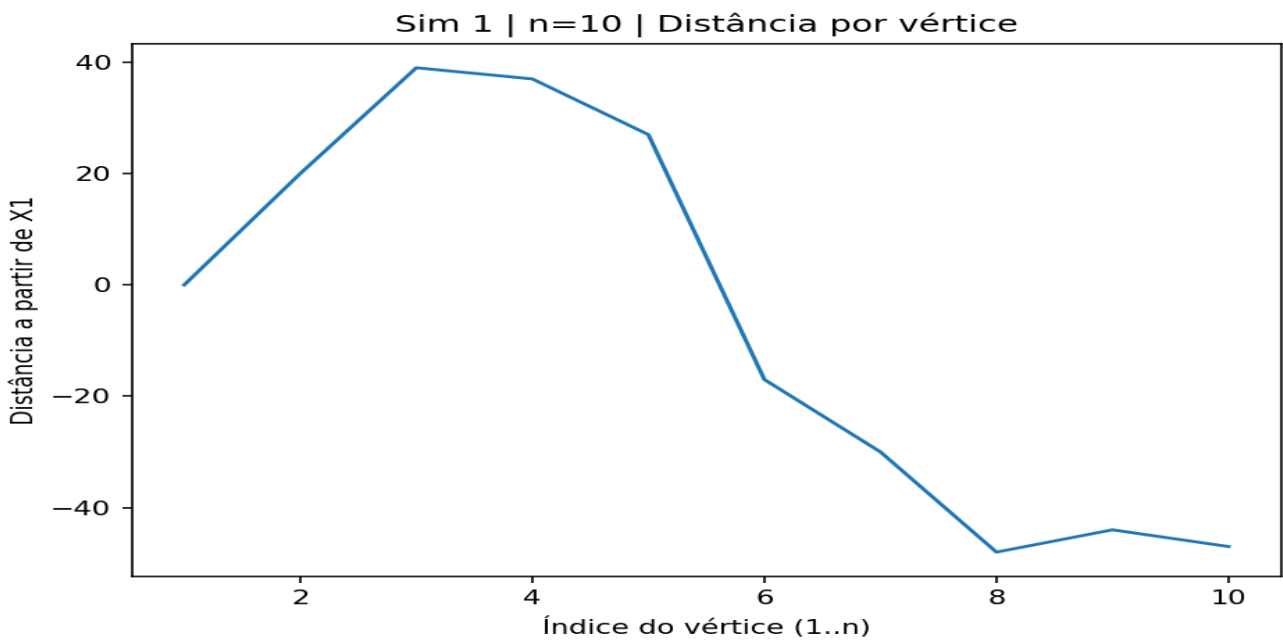
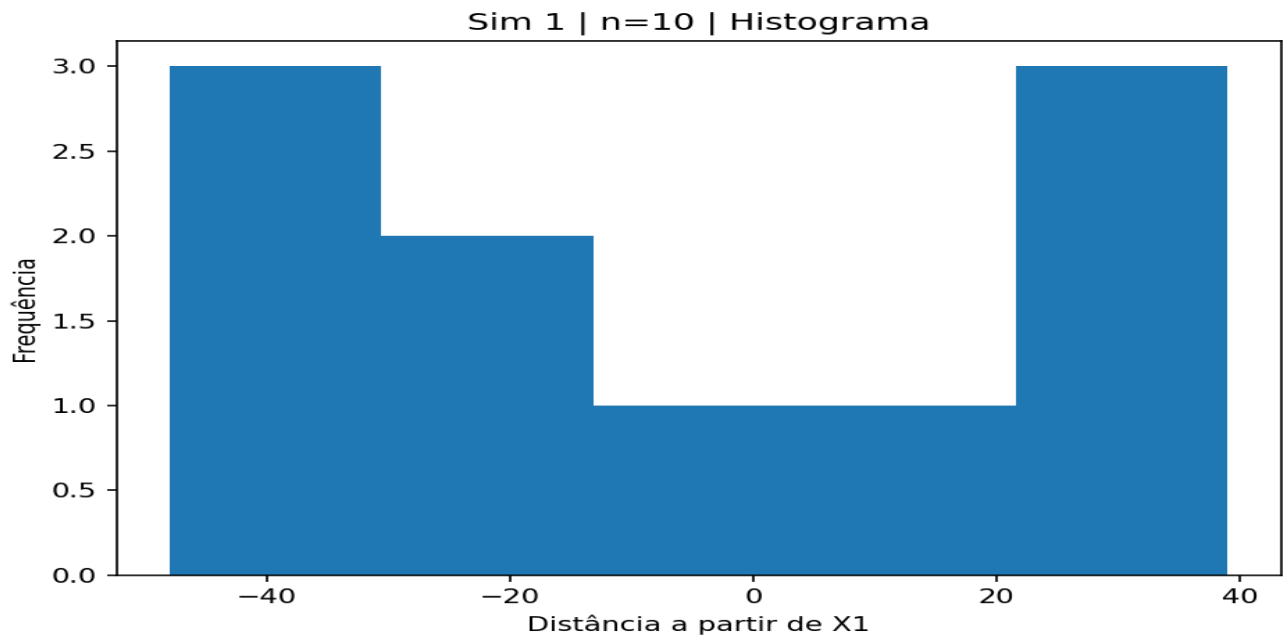
Arestas m=22 (densidade efetiva 0.244), arestas negativas=7. Alcançáveis=10/10. Tempo=0.000040s.

Top 5 mais distantes

label	distance	path
X3	39.0	X1 -> X2 -> X3
X4	37.0	X1 -> X2 -> X3 -> X4
X5	27.0	X1 -> X2 -> X5
X2	20.0	X1 -> X2
X1	0.0	X1

Top 5 mais próximos

label	distance	path
X8	-48.0	X1 -> X6 -> X7 -> X8
X10	-47.0	X1 -> X6 -> X7 -> X8 -> X9 -> X10
X9	-44.0	X1 -> X6 -> X7 -> X8 -> X9
X7	-30.0	X1 -> X6 -> X7
X6	-17.0	X1 -> X6



Execução n=100

Arestas m=1307 (densidade efetiva 0.132), arestas negativas=462. Alcançáveis=100/100. Tempo=0.000316s.

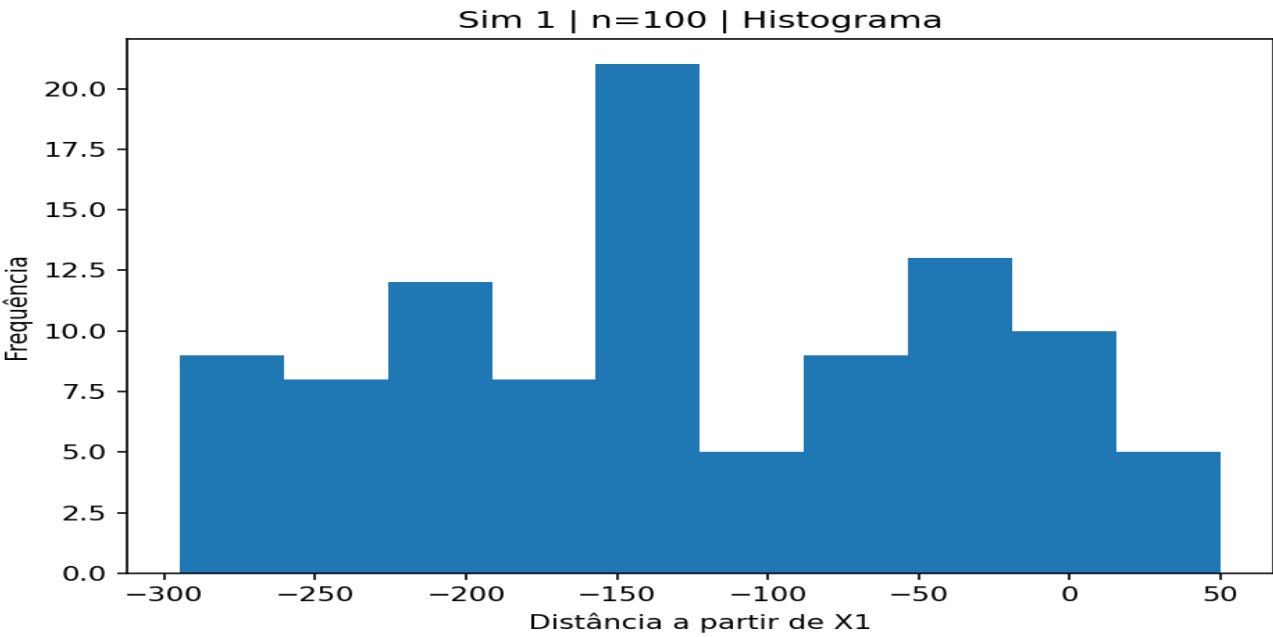
Top 5 mais distantes

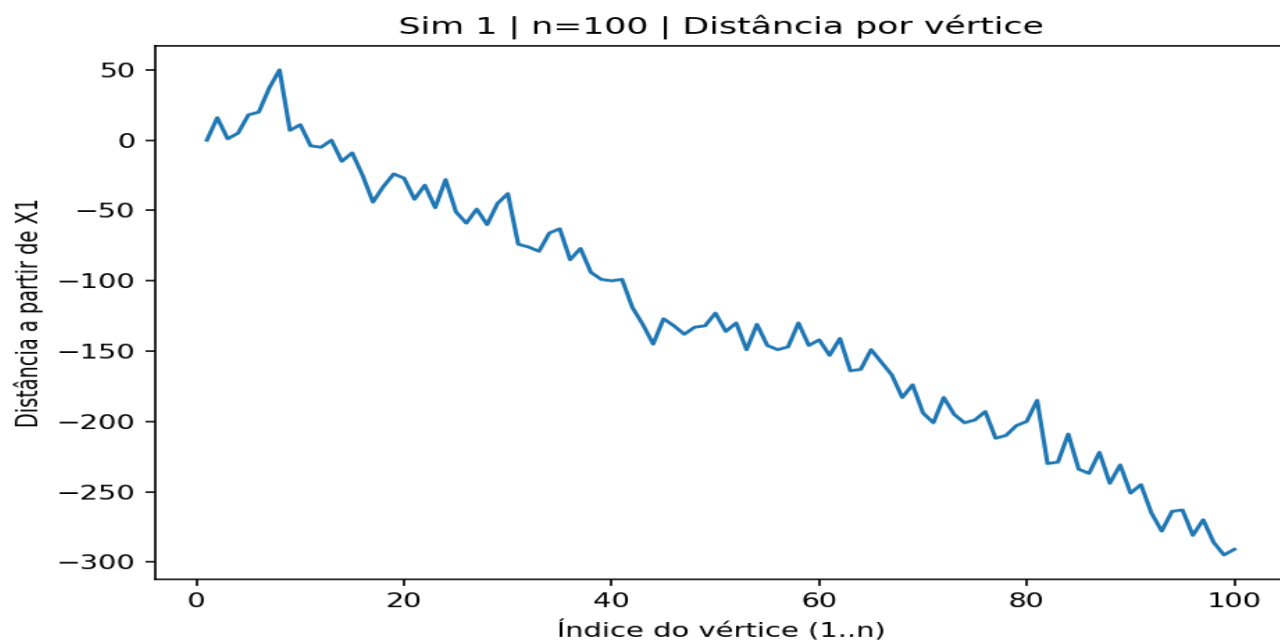
label	distance	path
X8	50.0	X1 -> X2 -> X3 -> X4 -> X6 -> X7 -> X8
X7	37.0	X1 -> X2 -> X3 -> X4 -> X6 -> X7
X6	20.0	X1 -> X2 -> X3 -> X4 -> X6

X5	18.0	X1 -> X2 -> X3 -> X4 -> X5
X2	16.0	X1 -> X2

Top 5 mais próximos

label	distance	path
X99	-295.0	X1 -> X2 -> X3 -> X4 -> X15 -> X16 -> X17 -> X20 -> X21 -> X25 -> X26 -> X33 -> X38 -> X39 -> X40 -> X41 -> X42 -> X43
X100	-291.0	X1 -> X2 -> X3 -> X4 -> X15 -> X16 -> X17 -> X20 -> X21 -> X25 -> X26 -> X33 -> X38 -> X39 -> X40 -> X41 -> X42 -> X43
X98	-286.0	X1 -> X2 -> X3 -> X4 -> X15 -> X16 -> X17 -> X20 -> X21 -> X25 -> X26 -> X33 -> X38 -> X39 -> X40 -> X41 -> X42 -> X43
X96	-281.0	X1 -> X2 -> X3 -> X4 -> X15 -> X16 -> X17 -> X20 -> X21 -> X25 -> X26 -> X33 -> X38 -> X39 -> X40 -> X41 -> X42 -> X43
X93	-278.0	X1 -> X2 -> X3 -> X4 -> X15 -> X16 -> X17 -> X20 -> X21 -> X25 -> X26 -> X33 -> X38 -> X39 -> X40 -> X41 -> X42 -> X43





Simulação 2 — Dijkstra com Heap (Best-First)

n	m	neg_edges	runtime_s	dist_mean	dist_std
10	25	0	2.3500004317611456e-05	24.0	17.894133116750865
100	2549	0	0.0004203999997116	6.7	2.418677324489565

Execução n=10

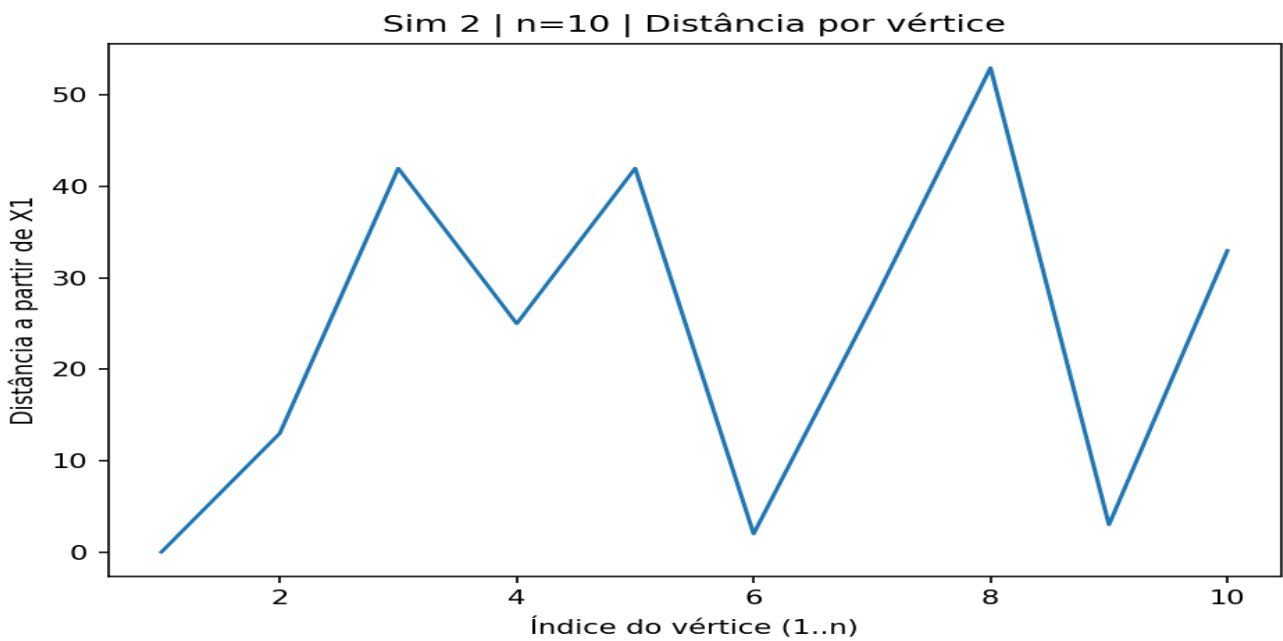
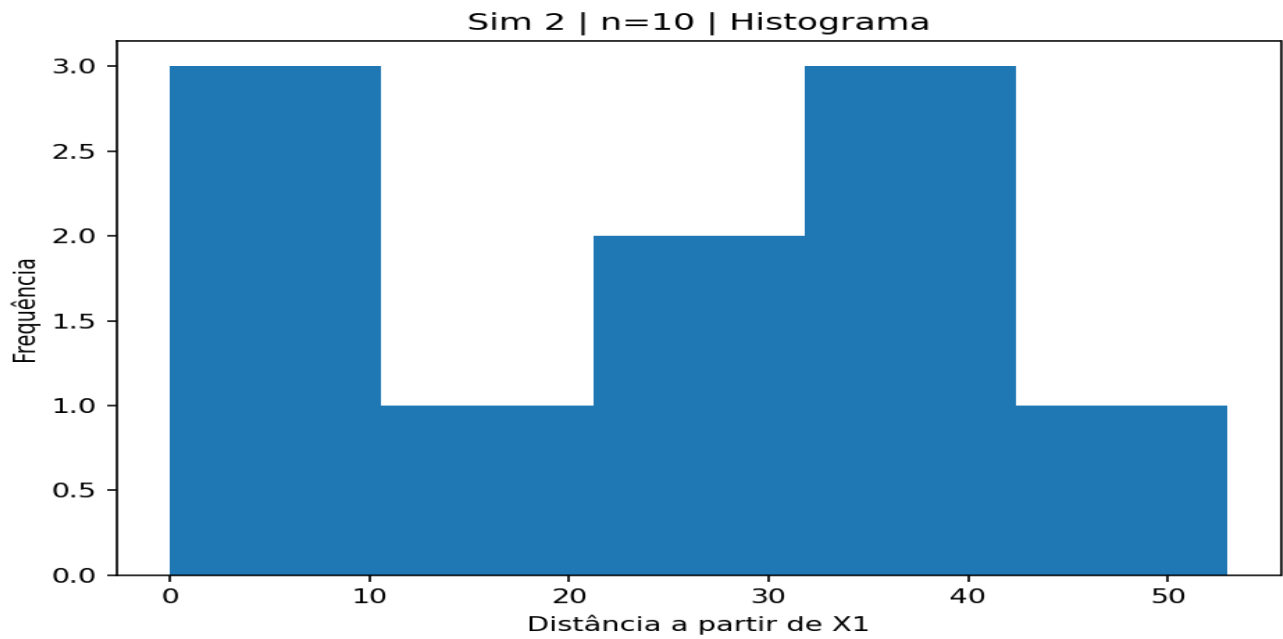
Arestas m=25 (densidade efetiva 0.278), arestas negativas=0. Alcançáveis=10/10. Tempo=0.000024s.

Top 5 mais distantes

label	distance	path
X8	53.0	X1 -> X6 -> X7 -> X8
X3	42.0	X1 -> X2 -> X3
X5	42.0	X1 -> X6 -> X9 -> X4 -> X5
X10	33.0	X1 -> X6 -> X9 -> X10
X7	27.0	X1 -> X6 -> X7

Top 5 mais próximos

label	distance	path
X1	0.0	X1
X6	2.0	X1 -> X6
X9	3.0	X1 -> X6 -> X9
X2	13.0	X1 -> X2
X4	25.0	X1 -> X6 -> X9 -> X4



Execução n=100

Arestas m=2549 (densidade efetiva 0.257), arestas negativas=0. Alcançáveis=100/100. Tempo=0.000420s.

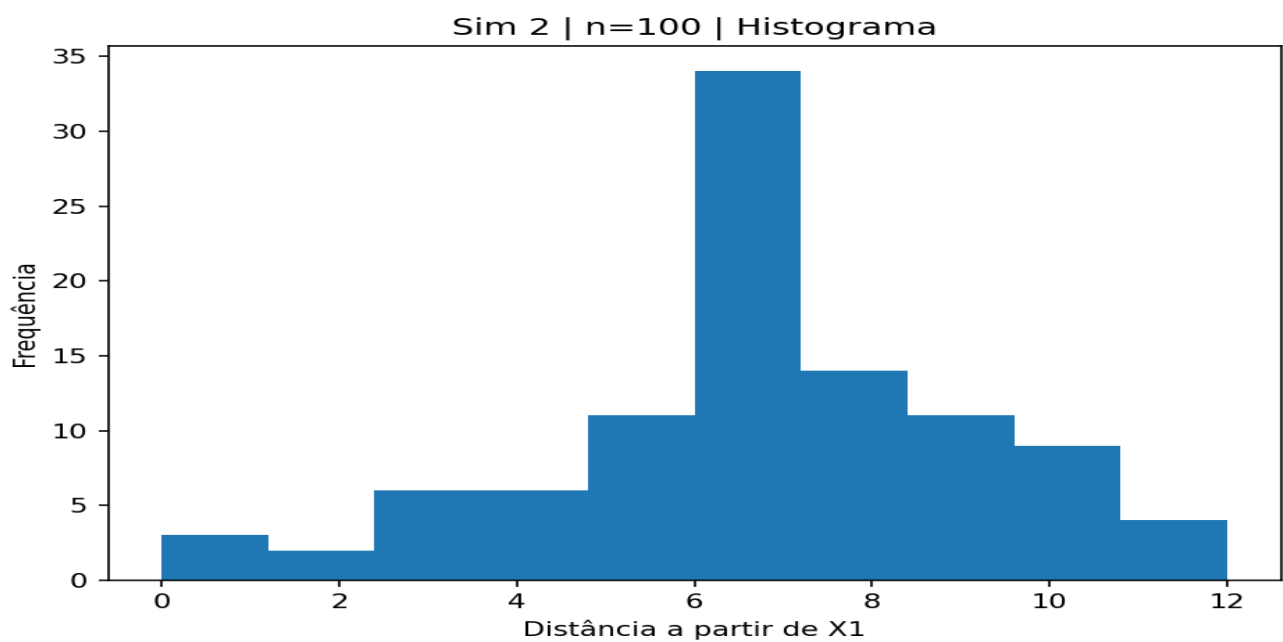
Top 5 mais distantes

label	distance	path
X61	12.0	X1 -> X32 -> X38 -> X23 -> X59 -> X4 -> X61
X19	11.0	X1 -> X76 -> X57 -> X55 -> X19
X37	11.0	X1 -> X76 -> X57 -> X36 -> X71 -> X6 -> X37

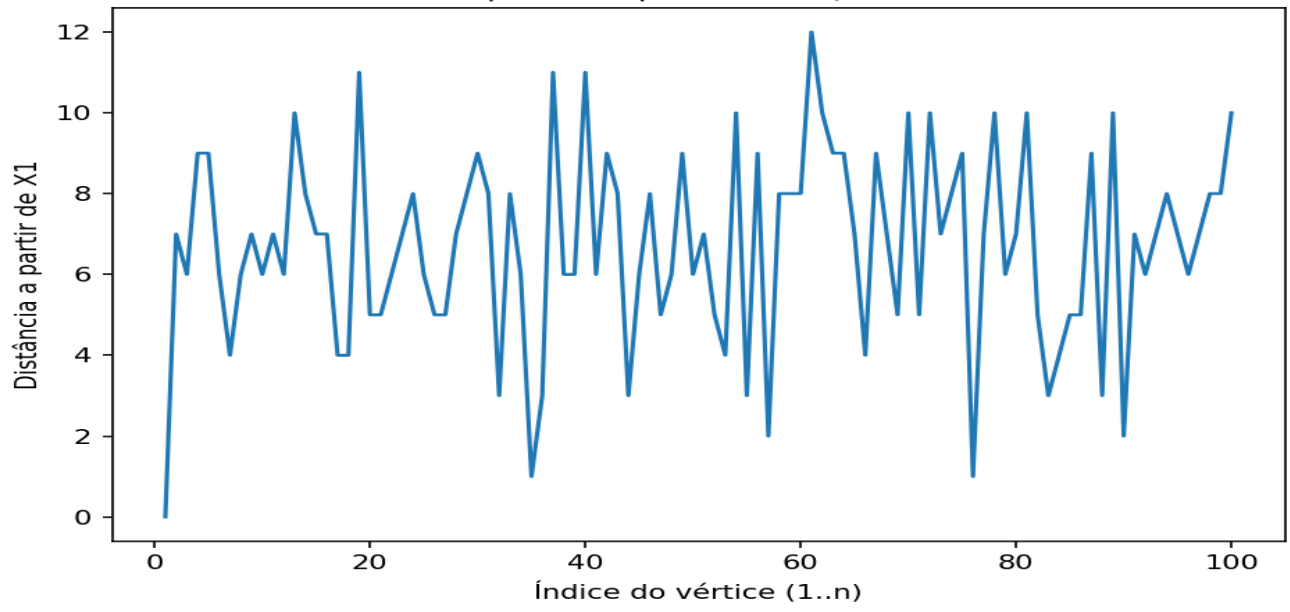
X40	11.0	X1 -> X32 -> X86 -> X14 -> X40
X70	10.0	X1 -> X70

Top 5 mais próximos

label	distance	path
X1	0.0	X1
X35	1.0	X1 -> X35
X76	1.0	X1 -> X76
X57	2.0	X1 -> X76 -> X57
X90	2.0	X1 -> X35 -> X90



Sim 2 | n=100 | Distância por vértice



Simulação 3 — Floyd-Warshall (matriz de custos)

n	m	neg_edges	runtime_s	dist_mean	dist_std
10	32	9	0.0010873999563045	24.6	13.965672200076874
100	2499	564	1.19922739994945	0.77	11.333009309093503

Execução n=10

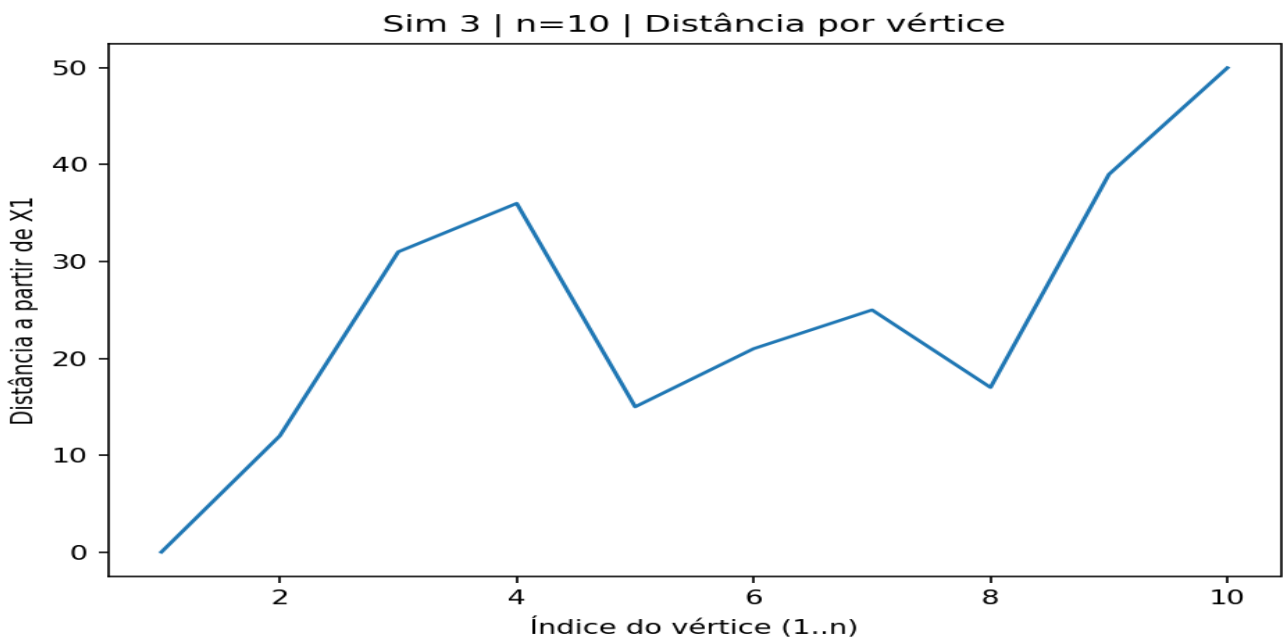
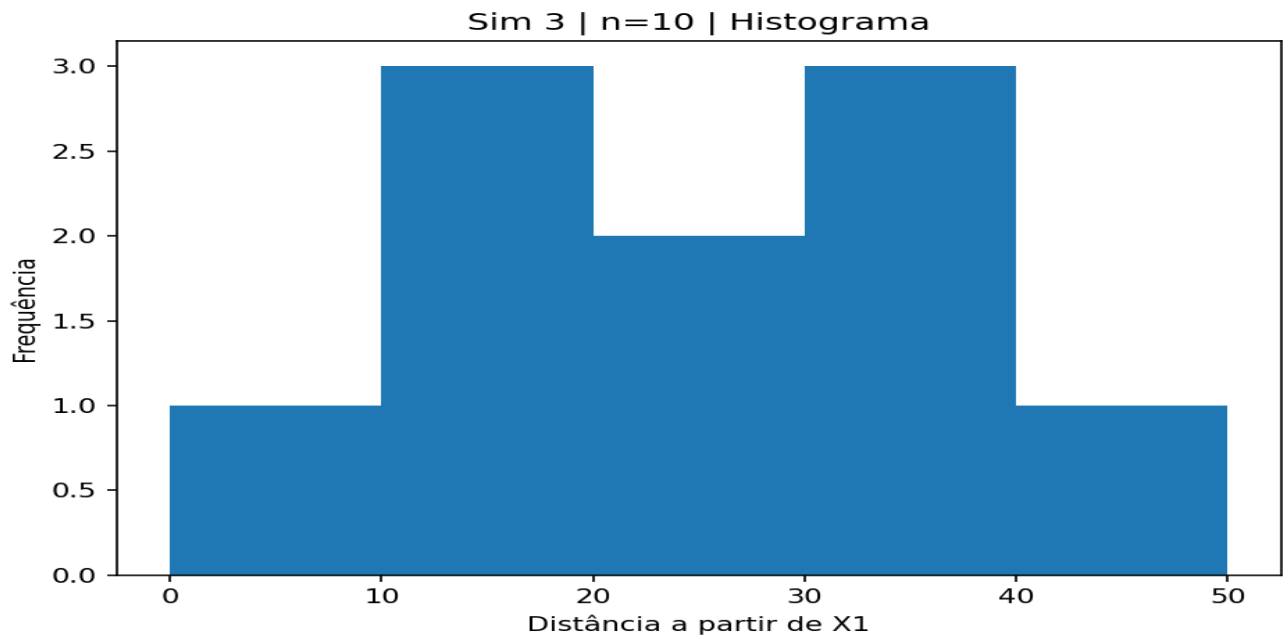
Arestas m=32 (densidade efetiva 0.356), arestas negativas=9. Alcançáveis=10/10. Tempo=0.001087s.

Top 5 mais distantes

label	distance	path
X10	50.0	X1 -> X2 -> X3 -> X10
X9	39.0	X1 -> X2 -> X9
X4	36.0	X1 -> X2 -> X4
X3	31.0	X1 -> X2 -> X3
X7	25.0	X1 -> X7

Top 5 mais próximos

label	distance	path
X1	0.0	X1
X2	12.0	X1 -> X2
X5	15.0	X1 -> X2 -> X4 -> X5
X8	17.0	X1 -> X2 -> X6 -> X8
X6	21.0	X1 -> X2 -> X6



Execução n=100

Arestas m=2499 (densidade efetiva 0.252), arestas negativas=564. Alcançáveis=100/100. Tempo=1.199227s.

Top 5 mais distantes

label	distance	path
X41	20.0	X1 -> X12 -> X41
X46	19.0	X1 -> X47 -> X87 -> X83 -> X46
X79	19.0	X1 -> X47 -> X87 -> X90 -> X79

X25	18.0	X1 -> X47 -> X87 -> X90 -> X79 -> X25
X50	18.0	X1 -> X58 -> X64 -> X37 -> X95 -> X50

Top 5 mais próximos

label	distance	path
X3	-20.0	X1 -> X47 -> X72 -> X60 -> X3
X29	-20.0	X1 -> X29
X52	-19.0	X1 -> X47 -> X72 -> X84 -> X52
X60	-18.0	X1 -> X47 -> X72 -> X60
X63	-18.0	X1 -> X47 -> X72 -> X84 -> X88 -> X63

