

Maintenance of Datalog Materialisations Revisited (All Experimental Results)

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Abstract

This document presents all results from all experiments from the paper with the same name. The experiment in question is described in square brackets in the caption of each table.

1. Robustness Experiments

Instance	Samp	Strat	Time (s)			Derivations		
			CNT	DRed	FBF	CNT	DRed	FBF
ChEMBL _L	U	N	11.98 ± 0.23	0.02 ± 0.00	0.02 ± 0.00	1.14 k ± 6.62	3.65 k ± 28.88	2.85 k ± 28.41
		Y	11.61 ± 0.23	0.01 ± 0.00	0.02 ± 0.00	1.05 k ± 8.72	1.29 k ± 11.72	1.29 k ± 11.72
	R	N	11.93 ± 0.53	0.03 ± 0.00	0.02 ± 0.00	1.42 k ± 10.45	2.55 k ± 22.07	2.26 k ± 19.48
		Y	11.78 ± 0.27	0.01 ± 0.00	0.02 ± 0.00	1.34 k ± 9.60	1.49 k ± 10.23	1.49 k ± 10.23
ChEMBL _R	U	N	37.79 ± 1.14	9.36 ± 0.16	0.46 ± 0.02	6.07 k ± 54.00	113.24 M ± 1.50 M	44.54 k ± 370.85
		Y	37.68 ± 0.91	9.22 ± 0.15	0.95 ± 0.03	6.07 k ± 54.00	113.24 M ± 1.50 M	14.41 M ± 299.82 k
	R	N	37.92 ± 0.85	7.62 ± 0.21	0.44 ± 0.02	7.62 k ± 67.76	92.95 M ± 1.94 M	24.10 k ± 329.40
		Y	38.81 ± 0.92	7.36 ± 0.22	0.77 ± 0.03	7.62 k ± 67.76	92.95 M ± 1.94 M	10.93 M ± 403.34 k
Claros _L	U	N	3.17 ± 0.06	0.36 ± 0.32	0.06 ± 0.00	7.77 k ± 92.78	35.13 k ± 20.36 k	15.66 k ± 167.07
		Y	2.84 ± 0.04	0.04 ± 0.00	0.05 ± 0.00	5.20 k ± 85.04	6.32 k ± 91.06	7.66 k ± 112.22
	R	N	3.17 ± 0.06	0.71 ± 0.32	0.96 ± 0.55	13.71 k ± 2.30 k	19.58 k ± 3.15 k	20.39 k ± 3.15 k
		Y	2.80 ± 0.02	0.92 ± 0.44	0.71 ± 0.40	12.49 k ± 2.29 k	13.33 k ± 2.29 k	16.03 k ± 2.88 k
Claros _{LE}	U	N	26.15 ± 0.81	5.45 k ± 1.29 k	582.89 ± 458.10	2.24 M ± 1.90 M	16.38 G ± 3.90 G	1.96 G ± 1.60 G
		Y	26.31 ± 0.80	1.81 k ± 997.80	472.54 ± 374.46	2.22 M ± 1.91 M	7.02 G ± 3.90 G	1.99 G ± 1.63 G
	R	N	25.94 ± 0.44	5.58 ± 2.78	4.69 ± 2.64	82.41 k ± 23.54 k	151.56 k ± 43.66 k	121.30 k ± 34.52 k
		Y	26.06 ± 0.65	4.18 ± 2.36	4.64 ± 2.66	80.78 k ± 23.56 k	81.77 k ± 23.61 k	114.09 k ± 33.74 k
DBpedia _L	U	N	24.41 ± 0.39	0.02 ± 0.00	0.03 ± 0.00	915.00 ± 16.47	1.46 k ± 44.28	1.40 k ± 37.68
		Y	24.73 ± 0.49	0.02 ± 0.00	0.03 ± 0.00	845.27 ± 18.72	1.27 k ± 34.36	1.29 k ± 33.78
	R	N	23.91 ± 0.43	0.02 ± 0.00	0.03 ± 0.00	769.37 ± 19.06	937.57 ± 27.66	1.02 k ± 33.97
		Y	23.96 ± 0.29	0.02 ± 0.00	0.05 ± 0.01	730.70 ± 17.12	881.07 ± 23.92	969.43 ± 31.29
Reactome _L	U	N	0.86 ± 0.02	0.07 ± 0.00	0.06 ± 0.00	2.22 k ± 41.63	10.19 k ± 229.79	5.38 k ± 77.98
		Y	0.76 ± 0.02	0.05 ± 0.00	0.05 ± 0.00	1.85 k ± 41.34	2.80 k ± 50.29	2.93 k ± 66.68
	R	N	0.77 ± 0.02	0.04 ± 0.00	0.02 ± 0.00	2.06 k ± 37.16	5.36 k ± 177.92	3.31 k ± 58.81
		Y	0.74 ± 0.02	0.04 ± 0.00	0.04 ± 0.00	1.84 k ± 32.96	2.33 k ± 39.04	2.36 k ± 40.36
Reactome _R	U	N	15.84 ± 0.11	40.37 ± 2.22	0.81 ± 0.02	170.36 k ± 11.08 k	77.24 M ± 2.51 M	325.82 k ± 13.97 k
		Y	15.71 ± 0.10	40.63 ± 2.19	0.85 ± 0.02	170.36 k ± 11.08 k	77.24 M ± 2.51 M	325.82 k ± 13.97 k
	R	N	16.23 ± 0.08	10.56 ± 1.42	0.34 ± 0.02	693.59 k ± 35.71 k	19.98 M ± 2.18 M	176.67 k ± 15.72 k
		Y	16.32 ± 0.11	10.48 ± 1.29	0.33 ± 0.02	693.59 k ± 35.71 k	19.98 M ± 2.18 M	176.67 k ± 15.72 k
Reactome _U	U	N	1.91 ± 0.04	2.80 ± 0.20	0.75 ± 0.08	7.23 k ± 135.36	46.10 k ± 875.24	18.13 k ± 248.22
		Y	1.71 ± 0.04	1.02 ± 0.12	0.98 ± 0.11	5.53 k ± 110.88	8.81 k ± 144.12	8.20 k ± 143.49
	R	N	1.85 ± 0.04	1.05 ± 0.21	0.68 ± 0.11	7.12 k ± 147.17	19.81 k ± 814.57	11.16 k ± 242.34
		Y	1.71 ± 0.04	0.49 ± 0.08	0.66 ± 0.11	6.46 k ± 117.01	7.81 k ± 140.12	7.76 k ± 142.88
UniProt _L	U	N	6.47 ± 0.11	0.02 ± 0.00	0.02 ± 0.00	1.62 k ± 12.86	3.45 k ± 58.73	3.66 k ± 30.68
		Y	6.30 ± 0.06	0.02 ± 0.00	0.02 ± 0.00	1.35 k ± 9.46	2.45 k ± 52.47	2.15 k ± 18.89
	R	N	6.66 ± 0.29	0.03 ± 0.00	0.02 ± 0.00	1.56 k ± 27.04	3.56 k ± 1.78 k	2.60 k ± 45.18
		Y	6.12 ± 0.08	0.04 ± 0.00	0.02 ± 0.00	1.51 k ± 26.07	1.91 k ± 29.70	1.92 k ± 29.39
UniProt _R	U	N	22.00 ± 0.15	8.10 ± 0.44	1.78 ± 0.04	6.71 k ± 119.71	35.78 M ± 502.85 k	23.34 k ± 920.14
		Y	21.94 ± 0.17	8.97 ± 0.70	4.09 ± 0.20	6.75 k ± 119.76	35.78 M ± 502.89 k	17.53 M ± 228.77 k
	R	N	22.05 ± 0.44	7.38 ± 0.43	1.98 ± 0.11	5.69 k ± 91.50	33.75 M ± 506.64 k	9.77 k ± 182.31
		Y	21.94 ± 0.73	8.78 ± 0.33	3.61 ± 0.18	5.63 k ± 88.56	33.75 M ± 506.65 k	16.74 M ± 211.70 k
UOBM-01K _L	U	N	21.18 ± 0.19	0.64 ± 0.03	0.05 ± 0.00	3.14 k ± 45.46	372.25 k ± 14.50 k	7.84 k ± 132.50
		Y	16.78 ± 0.06	0.04 ± 0.00	0.04 ± 0.00	3.11 k ± 45.69	13.08 k ± 164.06	7.30 k ± 120.61
	R	N	20.09 ± 0.34	1.18 ± 0.11	0.07 ± 0.01	9.03 k ± 621.51	782.08 k ± 79.09 k	16.34 k ± 1.05 k
		Y	16.68 ± 0.25	0.03 ± 0.00	0.03 ± 0.00	8.81 k ± 618.59	12.00 k ± 786.49	11.85 k ± 784.06
UOBM-01K _R	U	N	60.11 ± 0.64	15.36 ± 0.81	0.34 ± 0.00	10.84 k ± 382.39	11.93 M ± 470.97 k	114.01 k ± 751.83
		Y	50.54 ± 0.53	0.50 ± 0.01	0.21 ± 0.00	10.37 k ± 177.07	326.35 k ± 2.31 k	148.36 k ± 969.07
	R	N	62.37 ± 1.73	8.95 ± 0.91	0.14 ± 0.02	60.42 k ± 3.35 k	6.12 M ± 193.89 k	31.85 k ± 6.58 k
		Y	50.30 ± 0.54	0.25 ± 0.04	0.13 ± 0.02	9.57 k ± 1.51 k	59.81 k ± 7.88 k	33.84 k ± 5.36 k

Table 1: [Robustness / deletion] The average running times and numbers of derivations for deleting 1,000 facts

Instance	Samp	Strat	Breakdown of the numbers of derivations								
			CNT		DRed			FBF			
			add	del	fwd	bwd	del	fwd	bwd	del	
ChEMBL _L	U	N	48.40	1.10 k	1.03 k	543.50	2.08 k	1.55 k	244.40	1.05 k	
		Y	0.00	1.05 k	0.00	239.40	1.05 k	0.00	239.40	1.05 k	
		R	39.47	1.38 k	484.53	240.07	1.82 k	784.80	139.80	1.34 k	
ChEMBL _R	U	N	96.80	5.98 k	56.62 M	3.47 k	56.62 M	33.59 k	5.07 k	5.88 k	
		Y	96.80	5.98 k	56.62 M	3.47 k	56.62 M	14.39 M	5.84 k	5.88 k	
		R	78.93	7.54 k	46.47 M	1.55 k	46.48 M	14.42 k	2.22 k	7.46 k	
Claros _L	U	N	1.29 k	6.49 k	14.01 k	1.91 k	19.21 k	6.83 k	3.63 k	5.20 k	
		Y	0.07	5.20 k	2.07	1.11 k	5.21 k	2.73	2.45 k	5.20 k	
		R	610.30	13.10 k	2.96 k	1.16 k	15.45 k	3.45 k	4.45 k	12.49 k	
Claros _{LE}	U	N	13.45 k	2.23 M	8.19 G	118.11 k	8.19 G	1.89 G	74.65 M	2.22 M	
		Y	111.20	2.22 M	3.51 G	52.19 k	3.51 G	1.85 G	131.80 M	2.22 M	
		R	816.90	81.60 k	34.78 k	1.22 k	115.56 k	6.16 k	34.37 k	80.78 k	
DBpedia _L	U	N	45.87	869.13	305.60	20.57	1.13 k	195.53	378.13	823.27	
		Y	11.00	834.27	213.00	18.73	1.04 k	115.10	348.93	823.27	
		R	24.27	745.10	104.00	8.73	824.83	76.13	220.40	720.83	
Reactome _L	U	N	184.93	2.03 k	3.19 k	1.96 k	5.04 k	2.67 k	857.43	1.85 k	
		Y	0.00	1.85 k	0.10	945.47	1.85 k	129.40	946.60	1.85 k	
		R	111.80	1.95 k	1.41 k	696.57	3.25 k	1.08 k	387.90	1.84 k	
Reactome _R	U	N	19.34 k	151.02 k	38.51 M	102.87 k	38.64 M	155.58 k	38.56 k	131.68 k	
		Y	19.34 k	151.02 k	38.51 M	102.87 k	38.64 M	155.58 k	38.56 k	131.68 k	
		R	297.17 k	396.42 k	9.93 M	25.99 k	10.03 M	54.77 k	22.65 k	99.25 k	
Reactome _U	U	N	850.10	6.38 k	17.41 k	5.75 k	22.94 k	10.56 k	2.04 k	5.53 k	
		Y	0.00	5.53 k	527.83	2.22 k	6.06 k	269.87	2.40 k	5.53 k	
		R	330.33	6.79 k	5.98 k	1.38 k	12.44 k	3.56 k	1.14 k	6.46 k	
UniProt _L	U	N	134.33	1.49 k	640.63	815.60	1.99 k	1.49 k	810.30	1.35 k	
		Y	0.00	1.35 k	212.20	676.00	1.56 k	86.90	707.97	1.35 k	
		R	21.93	1.53 k	833.47	384.77	2.35 k	664.27	426.50	1.51 k	
UniProt _R	U	N	882.47	5.83 k	17.89 M	1.62 k	17.89 M	13.82 k	4.57 k	4.95 k	
		Y	901.03	5.85 k	17.89 M	1.54 k	17.89 M	17.52 M	3.96 k	4.95 k	
		R	123.70	5.57 k	16.87 M	331.50	16.88 M	2.50 k	1.83 k	5.44 k	
UOBM-01K _L	U	N	15.33	3.12 k	145.00 k	79.15 k	148.10 k	2.53 k	2.20 k	3.11 k	
		Y	1.73	3.11 k	3.81 k	2.35 k	6.92 k	2.04 k	2.15 k	3.11 k	
		R	115.33	8.92 k	303.30 k	166.68 k	312.10 k	4.75 k	2.79 k	8.80 k	
UOBM-01K _R	U	N	316.07	10.53 k	5.92 M	80.69 k	5.93 M	82.29 k	21.51 k	10.21 k	
		Y	78.23	10.29 k	156.82 k	2.50 k	167.03 k	120.30 k	17.84 k	10.21 k	
		R	25.51 k	34.91 k	3.03 M	41.55 k	3.04 M	16.47 k	5.98 k	9.40 k	
UOBM-01K _R	U	N	83.07	9.48 k	24.85 k	716.87	34.25 k	19.11 k	5.32 k	9.40 k	
		Y	83.07	9.48 k	24.85 k	716.87	34.25 k	19.11 k	5.32 k	9.40 k	
		R	83.07	9.48 k	24.85 k	716.87	34.25 k	19.11 k	5.32 k	9.40 k	

Table 2: [Robustness / deletion] The breakdown of the numbers of derivations reported in Table 1

Instance	Samp	Strat	Time (s)		Derivations			
			CNT	DRed/BBF	CNT			DRed/BBF
					add	del	total	
ChEMBL _L	U	N	11.72 ± 0.21	0.01 ± 0.00	1.10 k	48.40	1.14 k ± 6.62	1.05 k ± 8.72
		Y	11.37 ± 0.21	0.01 ± 0.00	1.05 k	0.00	1.05 k ± 8.72	1.05 k ± 8.72
	R	N	11.27 ± 0.13	0.01 ± 0.00	1.38 k	39.47	1.42 k ± 10.45	1.34 k ± 9.60
		Y	11.15 ± 0.09	0.01 ± 0.00	1.34 k	0.00	1.34 k ± 9.60	1.34 k ± 9.60
ChEMBL _R	U	N	36.85 ± 0.38	0.04 ± 0.00	5.98 k	96.80	6.07 k ± 54.00	5.88 k ± 57.78
		Y	37.17 ± 0.32	0.04 ± 0.00	5.98 k	96.80	6.07 k ± 54.00	5.88 k ± 57.78
	R	N	36.45 ± 0.46	0.03 ± 0.00	7.54 k	78.93	7.62 k ± 67.76	7.46 k ± 67.04
		Y	38.01 ± 0.56	0.03 ± 0.00	7.54 k	78.93	7.62 k ± 67.76	7.46 k ± 67.04
Claros _L	U	N	3.01 ± 0.02	0.02 ± 0.00	6.49 k	1.29 k	7.77 k ± 92.78	5.20 k ± 85.01
		Y	2.72 ± 0.02	0.02 ± 0.00	5.20 k	0.07	5.20 k ± 85.04	5.20 k ± 85.01
	R	N	3.01 ± 0.03	0.01 ± 0.00	13.10 k	610.30	13.71 k ± 2.30 k	12.49 k ± 2.29 k
		Y	2.73 ± 0.03	0.02 ± 0.00	12.49 k	0.67	12.49 k ± 2.29 k	12.49 k ± 2.29 k
Claros _{LE}	U	N	26.70 ± 1.10	0.77 ± 0.51	2.23 M	13.45 k	2.24 M ± 1.90 M	2.22 M ± 1.91 M
		Y	25.84 ± 0.79	0.71 ± 0.41	2.22 M	111.20	2.22 M ± 1.91 M	2.22 M ± 1.91 M
	R	N	26.21 ± 1.32	0.10 ± 0.03	81.60 k	816.90	82.41 k ± 23.54 k	80.78 k ± 23.56 k
		Y	24.67 ± 0.24	0.11 ± 0.03	80.78 k	1.87	80.78 k ± 23.56 k	80.78 k ± 23.56 k
DBpedia _L	U	N	24.11 ± 1.10	0.01 ± 0.00	869.13	45.87	915.00 ± 16.47	823.27 ± 18.61
		Y	24.01 ± 0.36	0.01 ± 0.00	834.27	11.00	845.27 ± 18.72	823.27 ± 18.61
	R	N	22.89 ± 0.19	0.01 ± 0.00	745.10	24.27	769.37 ± 19.06	720.83 ± 16.37
		Y	23.41 ± 0.24	0.01 ± 0.00	725.77	4.93	730.70 ± 17.12	720.83 ± 16.37
Reactome _L	U	N	0.81 ± 0.02	0.01 ± 0.00	2.03 k	184.93	2.22 k ± 41.63	1.85 k ± 41.34
		Y	0.72 ± 0.02	0.01 ± 0.00	1.85 k	0.00	1.85 k ± 41.34	1.85 k ± 41.34
	R	N	0.74 ± 0.02	0.01 ± 0.00	1.95 k	111.80	2.06 k ± 37.16	1.84 k ± 32.96
		Y	0.69 ± 0.02	0.01 ± 0.00	1.84 k	0.00	1.84 k ± 32.96	1.84 k ± 32.96
Reactome _R	U	N	15.67 ± 0.16	0.11 ± 0.00	151.02 k	19.34 k	170.36 k ± 11.08 k	131.68 k ± 11.09 k
		Y	15.44 ± 0.15	0.11 ± 0.00	151.02 k	19.34 k	170.36 k ± 11.08 k	131.68 k ± 11.09 k
	R	N	15.93 ± 0.21	0.09 ± 0.01	396.42 k	297.17 k	693.59 k ± 35.71 k	99.25 k ± 12.03 k
		Y	15.89 ± 0.06	0.09 ± 0.01	396.42 k	297.17 k	693.59 k ± 35.71 k	99.25 k ± 12.03 k
Reactome _U	U	N	1.74 ± 0.01	0.02 ± 0.00	6.38 k	850.10	7.23 k ± 135.36	5.53 k ± 110.88
		Y	1.62 ± 0.05	0.02 ± 0.00	5.53 k	0.00	5.53 k ± 110.88	5.53 k ± 110.88
	R	N	1.72 ± 0.01	0.01 ± 0.00	6.79 k	330.33	7.12 k ± 147.17	6.46 k ± 117.36
		Y	1.58 ± 0.01	0.01 ± 0.00	6.46 k	1.60	6.46 k ± 117.01	6.46 k ± 117.36
UniProt _L	U	N	6.28 ± 0.08	0.01 ± 0.00	1.49 k	134.33	1.62 k ± 12.86	1.35 k ± 9.46
		Y	6.25 ± 0.14	0.01 ± 0.00	1.35 k	0.00	1.35 k ± 9.46	1.35 k ± 9.46
	R	N	6.31 ± 0.05	0.01 ± 0.00	1.53 k	21.93	1.56 k ± 27.04	1.51 k ± 26.07
		Y	5.98 ± 0.09	0.01 ± 0.00	1.51 k	0.00	1.51 k ± 26.07	1.51 k ± 26.07
UniProt _R	U	N	21.69 ± 0.38	0.04 ± 0.00	5.83 k	882.47	6.71 k ± 119.71	4.95 k ± 80.45
		Y	21.78 ± 0.77	0.04 ± 0.00	5.85 k	901.03	6.75 k ± 119.76	4.95 k ± 80.45
	R	N	21.10 ± 0.24	0.03 ± 0.00	5.57 k	123.70	5.69 k ± 91.50	5.44 k ± 65.44
		Y	20.71 ± 0.18	0.04 ± 0.00	5.53 k	90.77	5.63 k ± 88.56	5.44 k ± 65.44
UOBM-01K _L	U	N	20.70 ± 0.63	0.02 ± 0.00	3.12 k	15.33	3.14 k ± 45.46	3.11 k ± 45.95
		Y	16.61 ± 0.19	0.02 ± 0.00	3.11 k	1.73	3.11 k ± 45.69	3.11 k ± 45.95
	R	N	19.74 ± 0.23	0.01 ± 0.00	8.92 k	115.33	9.03 k ± 621.51	8.80 k ± 618.61
		Y	16.26 ± 0.16	0.01 ± 0.00	8.81 k	3.70	8.81 k ± 618.59	8.80 k ± 618.61
UOBM-01K _R	U	N	61.47 ± 2.15	0.05 ± 0.00	10.53 k	316.07	10.84 k ± 382.39	10.21 k ± 164.57
		Y	50.88 ± 1.78	0.05 ± 0.00	10.29 k	78.23	10.37 k ± 177.07	10.21 k ± 164.57
	R	N	59.78 ± 0.69	0.03 ± 0.00	34.91 k	25.51 k	60.42 k ± 3.35 k	9.40 k ± 1.50 k
		Y	51.32 ± 1.36	0.03 ± 0.00	9.48 k	83.07	9.57 k ± 1.51 k	9.40 k ± 1.50 k

Table 3: [Robustness / addition] The average time and average total number of derivations for adding 1,000 facts

2. Scalability Experiments

Unstratified										
Instance	Facts	Time (s)					Derivations			
		CNT	DRed	FBF	Remat	CRemat	CNT	DRed	FBF	(C)Remat
ChEMBL _L	9.04 M	26.15	62.97	19.11	136.21	164.63	10.36 M	25.22 M	20.69 M	317.06 M
	18.07 M	40.49	96.43	25.36	98.71	157.03	20.74 M	44.61 M	37.55 M	307.56 M
	20.47 M	42.56	76.77	27.78	134.06	156.88	23.50 M	49.17 M	41.65 M	305.03 M
	27.11 M	40.11	130.29	45.73	97.53	151.35	31.13 M	60.77 M	52.37 M	298.04 M
	34.45 M	47.78	131.41	49.24	94.24	148.28	39.58 M	72.36 M	63.43 M	290.30 M
	36.15 M	47.90	119.04	47.74	100.19	145.93	41.53 M	74.89 M	65.90 M	288.52 M
	40.95 M	48.77	129.03	54.29	100.48	143.25	47.06 M	81.83 M	72.73 M	283.45 M
	61.42 M	62.82	152.50	72.01	80.28	135.62	70.69 M	108.87 M	100.18 M	261.81 M
	68.91 M	66.86	186.16	88.13	108.08	161.89	79.35 M	118.12 M	109.78 M	253.88 M
	81.90 M	80.99	181.47	104.73	82.19	128.15	94.39 M	133.74 M	126.11 M	240.09 M
	103.36 M	91.97	181.04	109.89	99.03	140.48	119.31 M	158.79 M	152.44 M	217.26 M
	137.81 M	105.25	198.26	136.52	66.53	105.25	159.46 M	197.85 M	193.58 M	180.44 M
ChEMBL _R	12.28 M	615.29	1.76 k	467.12	4.31 k	4.42 k	75.02 M	1.35 G	381.61 M	2.25 G
	24.57 M	811.91	2.53 k	797.24	4.02 k	5.08 k	150.97 M	1.85 G	631.25 M	2.18 G
	33.89 M	1.21 k	2.99 k	966.95	3.70 k	4.79 k	209.17 M	2.06 G	774.89 M	2.12 G
	36.85 M	1.44 k	3.26 k	992.97	3.61 k	4.81 k	227.81 M	2.12 G	815.24 M	2.11 G
	40.67 M	1.37 k	3.12 k	977.23	3.87 k	4.22 k	251.86 M	2.17 G	864.12 M	2.08 G
	49.14 M	1.84 k	3.31 k	1.18 k	3.74 k	4.06 k	305.66 M	2.27 G	963.53 M	2.03 G
	67.78 M	2.09 k	3.88 k	1.43 k	3.48 k	4.31 k	425.73 M	2.41 G	1.15 G	1.91 G
	81.33 M	2.47 k	4.11 k	1.63 k	3.59 k	4.02 k	514.46 M	2.48 G	1.27 G	1.83 G
	101.67 M	3.20 k	4.04 k	1.78 k	3.77 k	4.18 k	649.93 M	2.56 G	1.44 G	1.70 G
	122.00 M	2.96 k	4.26 k	1.99 k	3.46 k	3.82 k	788.34 M	2.63 G	1.59 G	1.56 G
	135.55 M	3.13 k	4.40 k	2.15 k	3.19 k	4.25 k	882.33 M	2.66 G	1.69 G	1.47 G
	162.67 M	3.17 k	4.87 k	2.64 k	2.64 k	2.78 k	1.07 G	2.71 G	1.86 G	1.28 G
Chlorox _L	562.05 k	7.47	21.01	7.01	55.02	68.86	4.35 M	8.81 M	8.34 M	125.30 M
	991.05 k	10.14	25.92	11.91	54.81	68.74	7.64 M	15.02 M	14.36 M	123.05 M
	1.12 M	11.85	31.42	14.81	54.43	67.29	8.66 M	16.89 M	16.18 M	123.34 M
	1.69 M	13.56	40.31	19.51	60.90	74.05	12.96 M	24.54 M	23.65 M	119.33 M
	1.98 M	15.35	45.54	29.48	53.32	66.56	15.21 M	28.42 M	27.44 M	117.73 M
	2.25 M	15.51	49.37	36.64	59.93	65.82	17.25 M	31.85 M	30.80 M	116.26 M
	2.34 M	15.88	51.08	29.42	53.82	66.36	17.95 M	33.00 M	31.94 M	115.76 M
	2.97 M	20.73	79.44	35.62	52.93	64.86	22.74 M	40.69 M	39.55 M	112.26 M
	3.96 M	21.17	99.50	58.36	51.61	62.92	30.17 M	51.91 M	50.86 M	106.66 M
	4.68 M	27.52	109.16	67.22	50.80	68.08	35.47 M	59.40 M	58.58 M	102.53 M
	7.02 M	29.04	140.68	75.39	50.21	54.93	52.55 M	80.85 M	81.85 M	88.42 M
	9.36 M	37.56	166.47	127.82	38.30	42.51	69.09 M	97.98 M	102.72 M	73.38 M
Chlorox _{LE}	4.59 k	30.90	5.96 k	2.66 k	3.67 k	4.69 k	2.70 M	23.41 G	10.51 G	12.63 G
	9.18 k	61.95	5.57 k	2.47 k	3.72 k	4.69 k	3.37 M	23.41 G	10.52 G	12.63 G
	13.76 k	73.83	5.61 k	2.84 k	3.66 k	5.05 k	19.51 M	23.40 G	12.55 G	12.61 G
	18.35 k	68.85	5.76 k	3.01 k	3.65 k	4.72 k	20.05 M	23.40 G	12.55 G	12.61 G
	18.35 k	71.84	5.71 k	2.89 k	3.70 k	4.67 k	20.05 M	23.40 G	12.55 G	12.61 G
	36.71 k	81.07	5.94 k	3.08 k	3.64 k	4.69 k	38.09 M	23.39 G	12.57 G	12.59 G
	55.06 k	179.07	6.17 k	3.32 k	3.83 k	4.57 k	306.97 M	23.13 G	12.76 G	12.33 G
	73.41 k	178.16	6.40 k	3.43 k	3.59 k	4.69 k	309.64 M	23.14 G	12.76 G	12.33 G
	367.06 k	476.05	11.00 k	6.45 k	3.40 k	4.32 k	819.77 M	22.85 G	13.07 G	11.90 G
	734.11 k	1.20 k	15.57 k	10.03 k	3.06 k	4.02 k	1.94 G	22.13 G	13.69 G	11.03 G
	1.10 M	1.91 k	19.69 k	13.90 k	2.88 k	3.69 k	2.72 G	21.68 G	14.13 G	10.44 G
	1.47 M	2.83 k	21.84 k	17.24 k	2.28 k	2.69 k	5.80 G	18.94 G	16.08 G	7.57 G
DBpedia _L	15.11 M	54.58	69.02	91.64	291.62	415.19	13.92 M	20.98 M	20.39 M	330.65 M
	18.13 M	63.63	116.74	109.29	290.92	371.58	16.70 M	24.96 M	24.40 M	328.16 M
	30.21 M	75.53	153.91	150.60	282.26	361.65	27.81 M	40.37 M	40.32 M	318.20 M
	36.25 M	85.52	171.24	206.58	338.04	357.40	33.37 M	47.78 M	48.22 M	313.21 M
	45.32 M	94.76	195.10	188.40	273.48	348.84	41.70 M	58.56 M	59.99 M	305.72 M
	51.36 M	102.78	253.97	279.01	355.15	354.50	47.26 M	65.54 M	67.79 M	300.71 M
	54.38 M	100.09	279.99	275.34	344.87	355.23	50.03 M	68.98 M	71.68 M	298.21 M
	60.42 M	95.85	253.54	248.77	339.68	353.39	55.59 M	75.75 M	79.44 M	293.20 M
	72.51 M	117.91	390.95	305.64	336.14	341.26	66.70 M	88.92 M	94.87 M	283.16 M
	102.72 M	140.55	443.91	467.98	305.92	310.10	94.41 M	119.94 M	133.00 M	258.01 M
	154.08 M	166.18	606.25	595.91	272.09	267.97	141.35 M	168.41 M	196.98 M	214.90 M
	205.44 M	174.89	965.16	1.03 k	189.43	192.60	188.03 M	213.19 M	260.59 M	171.13 M
Reactome _L	341.41 k	1.92	4.89	2.87	16.84	20.53	752.32 k	2.11 M	1.65 M	23.37 M
	637.09 k	2.78	9.24	6.34	20.60	19.74	1.39 M	3.72 M	2.94 M	22.83 M
	682.82 k	2.91	11.95	6.88	18.59	18.16	1.49 M	3.95 M	3.13 M	22.74 M
	1.02 M	3.82	15.89	9.48	18.40	19.32	2.23 M	5.62 M	4.52 M	22.12 M
	1.27 M	5.87	19.95	11.30	15.54	21.87	2.77 M	6.75 M	5.47 M	21.67 M
	1.37 M	6.05	20.93	11.96	18.20	19.05	2.96 M	7.14 M	5.81 M	21.50 M
	1.37 M	4.69	21.23	9.16	18.16	19.06	2.96 M	7.14 M	5.81 M	21.50 M
	1.91 M	5.14	26.01	12.10	17.83	18.63	4.12 M	9.33 M	7.72 M	20.52 M
	2.55 M	7.01	24.18	15.08	17.31	18.06	5.45 M	11.58 M	9.75 M	19.38 M
	2.73 M	6.65	32.74	15.81	17.16	17.88	5.83 M	12.18 M	10.30 M	19.05 M
	4.10 M	11.23	32.18	27.43	15.82	16.45	8.61 M	16.01 M	14.01 M	16.62 M
	5.46 M	18.95	44.69	30.50	17.91	18.97	11.32 M	18.98 M	17.13 M	14.19 M

Table 4: [Scalability / deletion / unstratified] Deleting 25%, 50%, 75%, and 100% of break-even points with unstratified programs

Unstratified										
Instance	Facts	Time (s)					Derivations			
		CNT	DRed	FBF	Remat	CRemat	CNT	DRed	FBF	(C)Remat
Reactome _k	438.95 k	238.68	457.19	196.78	1.07 k	1.22 k	73.60 M	889.84 M	117.54 M	1.57 G
	877.91 k	315.20	677.40	315.08	1.07 k	1.18 k	144.19 M	1.16 G	213.04 M	1.51 G
	1.07 M	449.84	765.82	377.74	1.01 k	1.23 k	175.43 M	1.25 G	252.56 M	1.49 G
	1.32 M	544.65	831.06	423.27	1.05 k	1.22 k	213.69 M	1.35 G	298.42 M	1.46 G
	1.76 M	652.37	982.78	455.02	992.56	1.17 k	281.68 M	1.50 G	375.84 M	1.41 G
	1.76 M	524.61	1.02 k	407.65	1.06 k	1.10 k	281.69 M	1.50 G	375.84 M	1.41 G
	2.15 M	788.74	1.04 k	535.73	959.34	1.07 k	341.30 M	1.61 G	439.91 M	1.37 G
	2.63 M	782.84	1.15 k	585.88	908.03	1.00 k	414.33 M	1.72 G	515.08 M	1.31 G
	3.22 M	954.33	1.24 k	640.57	862.82	950.91	499.55 M	1.82 G	598.73 M	1.25 G
	3.51 M	1.06 k	1.17 k	681.38	867.41	925.55	541.74 M	1.86 G	638.82 M	1.22 G
4.29 M	1.21 k	1.33 k	731.46	764.34	876.07	651.05 M	1.95 G	739.43 M	1.14 G	
Reactome _U	3.05 k	1.81	8.25	2.47	44.09	48.12	20.92 k	129.57 k	52.52 k	86.72 M
	6.10 k	1.85	26.23	6.31	39.13	47.81	43.99 k	254.41 k	108.11 k	86.70 M
	9.14 k	1.99	26.35	6.41	39.60	48.22	65.78 k	382.39 k	162.92 k	86.68 M
	12.19 k	1.99	50.71	8.79	39.09	47.81	88.17 k	503.51 k	219.39 k	86.67 M
	18.29 k	1.98	52.54	13.00	44.04	47.80	131.85 k	748.20 k	327.40 k	86.63 M
	27.43 k	2.09	110.39	18.65	44.32	47.79	199.19 k	1.12 M	492.21 k	86.58 M
	36.58 k	2.18	118.34	24.76	39.53	47.80	266.06 k	1.47 M	655.42 k	86.53 M
	1.46 M	11.08	1.99 k	1.04 k	42.43	46.07	10.41 M	38.88 M	20.64 M	78.54 M
	2.93 M	18.03	2.06 k	1.81 k	37.30	42.51	20.76 M	61.60 M	36.05 M	70.07 M
	4.39 M	19.81	1.52 k	2.63 k	35.66	38.52	30.99 M	76.03 M	48.93 M	61.29 M
5.85 M	27.29	929.09	3.42 k	32.81	35.04	41.16 M	85.30 M	60.25 M	52.10 M	
UniProt _L	9.56 M	24.76	26.89	30.01	80.15	101.65	15.41 M	24.21 M	25.92 M	169.75 M
	10.40 M	23.70	33.60	33.37	78.90	107.49	16.76 M	26.15 M	28.05 M	168.60 M
	16.35 M	29.34	39.52	38.05	75.83	116.57	26.27 M	39.43 M	42.60 M	160.43 M
	19.11 M	31.67	47.21	48.87	77.21	98.44	30.67 M	45.34 M	49.08 M	156.61 M
	20.80 M	33.15	57.39	60.10	75.43	97.28	33.34 M	48.87 M	52.96 M	154.28 M
	28.67 M	43.26	64.79	61.47	70.99	92.07	45.75 M	64.68 M	70.36 M	143.31 M
	31.19 M	41.65	69.19	66.06	82.77	102.55	49.70 M	69.52 M	75.70 M	139.77 M
	32.70 M	52.80	71.88	68.74	94.60	102.62	52.05 M	72.36 M	78.84 M	137.65 M
	38.23 M	55.20	75.21	78.78	99.05	99.73	60.65 M	82.48 M	90.02 M	129.83 M
	41.59 M	43.59	84.85	107.61	69.09	102.07	65.85 M	88.40 M	96.58 M	125.04 M
49.04 M	59.07	94.43	96.98	64.69	80.13	77.28 M	100.92 M	110.45 M	114.35 M	
65.39 M	71.26	114.15	138.96	67.04	78.43	101.89 M	125.64 M	137.78 M	90.45 M	
UniProt _k	7.33 M	915.02	811.57	521.95	2.84 k	2.72 k	49.26 M	276.92 M	116.33 M	778.56 M
	9.62 M	1.12 k	979.06	636.59	2.40 k	2.72 k	64.61 M	316.36 M	145.08 M	766.97 M
	10.76 M	1.19 k	1.12 k	689.94	2.41 k	2.72 k	72.30 M	334.70 M	158.83 M	761.14 M
	14.66 M	1.40 k	1.29 k	820.93	2.52 k	2.63 k	98.64 M	392.26 M	203.68 M	741.01 M
	19.23 M	1.49 k	1.60 k	1.07 k	2.28 k	2.55 k	129.42 M	451.58 M	252.47 M	717.20 M
	21.52 M	1.57 k	1.77 k	1.16 k	2.26 k	2.53 k	144.84 M	478.74 M	275.72 M	705.16 M
	22.00 M	1.40 k	1.71 k	1.20 k	2.44 k	2.53 k	148.08 M	484.26 M	280.52 M	702.61 M
	28.85 M	1.92 k	2.12 k	1.49 k	2.28 k	2.41 k	194.33 M	556.40 M	346.18 M	665.90 M
	29.33 M	1.94 k	2.18 k	1.42 k	2.38 k	2.41 k	197.57 M	561.06 M	350.59 M	663.28 M
	32.27 M	2.19 k	2.38 k	1.55 k	2.24 k	2.36 k	217.49 M	588.39 M	377.35 M	647.16 M
38.47 M	2.33 k	2.81 k	1.99 k	2.19 k	2.26 k	259.28 M	640.38 M	431.22 M	612.77 M	
43.03 M	2.49 k	3.06 k	2.24 k	2.13 k	2.19 k	290.10 M	674.31 M	469.25 M	586.85 M	
UOBM-01K _L	19.96 M	91.11	229.36	103.24	549.35	572.64	62.79 M	194.76 M	126.36 M	730.60 M
	23.88 M	119.11	220.01	123.88	545.22	564.30	75.07 M	207.84 M	147.79 M	718.44 M
	29.85 M	140.78	220.04	161.74	544.76	562.45	93.76 M	227.33 M	179.28 M	699.94 M
	39.93 M	150.34	218.60	147.64	426.86	458.76	125.26 M	259.33 M	230.17 M	668.77 M
	47.77 M	180.64	296.06	165.19	381.12	447.27	149.66 M	283.52 M	268.19 M	644.61 M
	59.71 M	170.14	309.37	190.44	363.51	413.90	186.83 M	319.56 M	324.49 M	607.84 M
	59.89 M	199.31	330.53	202.08	299.21	404.90	187.41 M	320.12 M	325.37 M	607.26 M
	71.65 M	229.30	325.11	258.14	357.59	401.63	223.91 M	354.71 M	379.22 M	571.16 M
	79.86 M	215.86	340.07	230.47	344.31	383.31	249.36 M	378.45 M	416.14 M	545.98 M
	89.56 M	257.52	340.45	290.86	331.19	366.40	279.44 M	406.13 M	459.19 M	516.23 M
95.53 M	332.01	357.21	295.49	262.54	354.81	297.95 M	422.95 M	485.39 M	497.93 M	
119.42 M	330.01	400.11	349.40	280.23	307.06	371.93 M	488.77 M	588.05 M	424.78 M	
UOBM-01K _k	2.11 M	386.96	4.88 k	259.18	4.70 k	5.31 k	22.58 M	4.06 G	222.43 M	2.81 G
	4.23 M	514.85	4.56 k	494.59	4.82 k	5.45 k	45.19 M	4.09 G	415.60 M	2.79 G
	6.34 M	815.21	4.68 k	585.28	4.85 k	6.09 k	67.67 M	4.10 G	583.96 M	2.77 G
	8.46 M	866.35	4.74 k	769.72	4.77 k	6.18 k	90.18 M	4.11 G	731.51 M	2.75 G
	28.49 M	2.31 k	4.88 k	1.59 k	4.49 k	6.02 k	302.70 M	4.09 G	1.53 G	2.55 G
	31.84 M	2.94 k	4.90 k	1.66 k	4.41 k	5.71 k	338.22 M	4.08 G	1.61 G	2.51 G
	56.97 M	3.99 k	4.94 k	2.17 k	4.13 k	5.52 k	603.02 M	3.99 G	2.00 G	2.27 G
	63.69 M	3.94 k	5.11 k	2.39 k	3.81 k	4.84 k	673.56 M	3.97 G	2.07 G	2.20 G
	85.46 M	4.78 k	5.64 k	2.96 k	3.69 k	4.30 k	901.93 M	3.89 G	2.30 G	1.99 G
	95.53 M	5.00 k	5.14 k	2.88 k	3.48 k	4.33 k	1.01 G	3.86 G	2.40 G	1.90 G
113.94 M	4.57 k	5.59 k	3.36 k	3.18 k	3.90 k	1.20 G	3.79 G	2.57 G	1.73 G	
127.38 M	4.20 k	5.76 k	3.66 k	2.76 k	4.40 k	1.34 G	3.74 G	2.69 G	1.60 G	

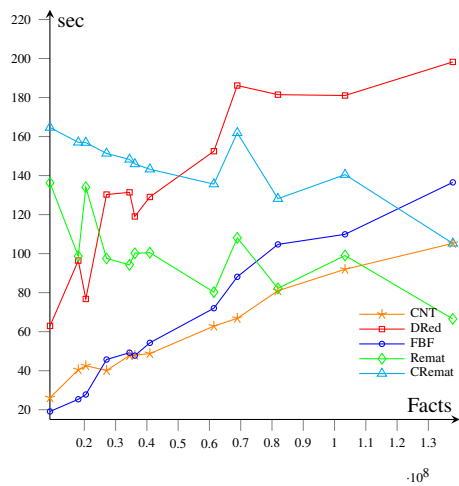
Table 5: [Scalability / deletion / unstratified] Deleting 25%, 50%, 75%, and 100% of break-even points with unstratified programs (continued from Table 4)

Stratified											
Instance	Facts	Time (s)					Derivations				
		CNT	DRed	FBF	Remat	CRemat	CNT	DRed	FBF	(C)Remat	
ChEMBL _L	31.63 M	45.06	32.20	36.49	146.57	155.64	33.27 M	37.42 M	37.42 M	293.28 M	
	35.72 M	46.44	40.89	35.71	135.46	152.53	37.58 M	42.14 M	42.14 M	288.97 M	
	63.26 M	69.98	64.08	73.14	118.33	149.82	66.69 M	73.65 M	73.65 M	259.86 M	
	71.45 M	59.63	71.24	81.48	117.03	156.36	75.36 M	82.97 M	82.97 M	251.19 M	
	94.89 M	91.00	84.10	81.71	101.23	121.16	100.27 M	109.59 M	109.59 M	226.28 M	
	107.17 M	85.16	93.44	97.71	137.86	144.36	113.35 M	123.51 M	123.51 M	213.20 M	
	126.52 M	99.74	102.29	126.52	109.15	140.46	134.02 M	145.40 M	145.40 M	192.53 M	
	142.90 M	115.73	118.87	138.19	87.82	102.71	151.56 M	163.93 M	163.93 M	174.99 M	
ChEMBL _{4r}	13.56 M	344.49	1.83 k	537.00	4.07 k	4.87 k	82.83 M	1.40 G	510.73 M	2.25 G	
	27.11 M	682.78	2.67 k	803.79	4.13 k	4.07 k	166.79 M	1.90 G	780.92 M	2.16 G	
	40.67 M	880.45	3.18 k	944.09	3.62 k	3.99 k	251.86 M	2.14 G	957.32 M	2.08 G	
	41.80 M	831.44	3.12 k	1.03 k	3.60 k	4.82 k	259.00 M	2.16 G	969.71 M	2.08 G	
	50.13 M	1.05 k	3.46 k	1.11 k	3.66 k	4.82 k	311.97 M	2.24 G	1.05 G	2.02 G	
	54.22 M	1.09 k	3.60 k	1.22 k	3.44 k	4.83 k	338.17 M	2.28 G	1.09 G	2.00 G	
	83.59 M	1.74 k	4.31 k	1.79 k	3.12 k	3.48 k	529.37 M	2.44 G	1.33 G	1.81 G	
	100.25 M	1.60 k	4.59 k	2.07 k	3.56 k	4.48 k	640.43 M	2.50 G	1.44 G	1.71 G	
	125.39 M	2.52 k	4.26 k	2.02 k	3.02 k	4.65 k	811.70 M	2.57 G	1.61 G	1.54 G	
	150.38 M	2.91 k	4.55 k	2.38 k	2.68 k	2.95 k	986.72 M	2.63 G	1.76 G	1.37 G	
	167.18 M	2.74 k	4.59 k	2.51 k	2.54 k	3.35 k	1.11 G	2.66 G	1.86 G	1.25 G	
	200.51 M	2.74 k	4.79 k	2.90 k	2.59 k	2.68 k	1.35 G	2.70 G	2.04 G	1.01 G	
	Claros _L	1.32 M	13.65	18.60	14.65	73.06	96.68	6.92 M	8.24 M	10.01 M	121.30 M
1.38 M		11.92	14.34	20.59	72.42	87.30	7.22 M	8.59 M	10.43 M	121.00 M	
2.64 M		15.08	36.48	41.37	79.25	84.78	14.12 M	16.58 M	20.11 M	114.10 M	
2.75 M		15.47	29.03	31.89	70.25	84.46	14.73 M	17.27 M	20.95 M	113.49 M	
3.08 M		18.92	30.47	46.57	77.56	83.24	16.57 M	19.36 M	23.49 M	111.65 M	
3.96 M		21.48	50.43	43.48	75.51	88.99	21.56 M	24.98 M	30.28 M	106.66 M	
4.13 M		19.35	52.24	59.20	67.01	86.34	22.50 M	26.04 M	31.56 M	105.72 M	
5.29 M		23.40	62.77	72.90	70.07	76.20	29.25 M	33.49 M	40.56 M	98.96 M	
5.51 M		25.01	66.12	57.65	69.54	74.63	30.56 M	34.92 M	42.28 M	97.65 M	
6.17 M		30.18	65.55	77.04	60.75	73.30	34.54 M	39.23 M	47.47 M	93.68 M	
9.25 M		33.63	78.40	124.02	55.70	62.17	54.11 M	59.83 M	72.18 M	74.10 M	
12.33 M	51.14	105.74	131.47	35.71	41.54	75.48 M	81.16 M	97.61 M	52.74 M		
Claros _{LE}	36.71 k	79.61	5.84 k	3.29 k	3.21 k	4.64 k	37.24 M	23.38 G	12.56 G	12.59 G	
	73.41 k	243.50	6.05 k	3.63 k	3.26 k	4.36 k	308.01 M	23.12 G	12.75 G	12.33 G	
	110.12 k	539.33	6.24 k	3.96 k	3.94 k	4.72 k	349.31 M	23.10 G	12.77 G	12.29 G	
	146.82 k	900.19	6.74 k	4.42 k	4.39 k	5.30 k	404.73 M	23.06 G	12.81 G	12.24 G	
	507.00 k	1.14 k	10.07 k	8.05 k	4.03 k	4.83 k	1.19 G	22.54 G	13.23 G	11.63 G	
	1.01 M	1.65 k	14.58 k	13.17 k	3.49 k	4.20 k	2.41 G	21.64 G	13.96 G	10.60 G	
	1.52 M	2.65 k	17.50 k	17.19 k	2.27 k	2.92 k	5.81 G	18.68 G	16.09 G	7.51 G	
	2.03 M	2.99 k	19.90 k	19.75 k	2.14 k	2.67 k	7.14 G	18.31 G	16.52 G	7.04 G	
DBpedia _L	23.77 M	88.01	119.49	158.41	410.12	508.50	20.12 M	28.59 M	30.23 M	323.51 M	
	24.65 M	88.04	130.26	160.38	408.34	514.52	20.87 M	29.60 M	31.34 M	322.78 M	
	47.54 M	110.43	235.63	240.86	404.96	492.09	40.30 M	55.03 M	59.92 M	303.88 M	
	48.34 M	129.07	227.97	219.11	404.05	490.87	40.98 M	55.89 M	60.92 M	303.21 M	
	49.30 M	114.99	213.01	224.03	396.81	491.20	41.80 M	56.91 M	62.10 M	302.42 M	
	71.30 M	137.47	358.11	387.43	377.63	471.15	60.58 M	79.93 M	89.31 M	284.16 M	
	73.94 M	147.92	334.39	397.16	390.69	461.54	62.84 M	82.62 M	92.56 M	281.97 M	
	95.07 M	158.22	395.72	450.31	379.10	428.19	80.92 M	103.62 M	118.45 M	264.38 M	
	96.68 M	170.68	484.47	496.60	348.13	426.02	82.30 M	105.18 M	120.42 M	263.04 M	
	98.59 M	182.52	441.81	495.34	346.48	424.27	83.94 M	107.04 M	122.75 M	261.45 M	
	145.01 M	232.14	626.50	607.14	351.50	364.62	123.99 M	150.60 M	179.31 M	222.55 M	
	193.35 M	264.04	903.86	1.04 k	203.33	276.07	166.23 M	193.53 M	238.29 M	181.50 M	
	Reactome _L	585.27 k	2.21	2.89	3.09	12.99	22.96	1.08 M	1.54 M	1.57 M	22.92 M
		682.82 k	2.38	4.48	3.55	11.90	21.48	1.25 M	1.78 M	1.82 M	22.74 M
1.17 M		3.79	5.80	5.56	14.68	22.53	2.14 M	2.99 M	3.04 M	21.86 M	
1.37 M		3.39	5.88	8.45	14.63	22.16	2.50 M	3.47 M	3.52 M	21.50 M	
1.76 M		3.97	8.99	7.88	14.64	24.69	3.20 M	4.39 M	4.44 M	20.80 M	
2.05 M		4.81	8.16	11.79	14.30	21.29	3.72 M	5.07 M	5.12 M	20.27 M	
2.16 M		4.93	11.22	12.20	12.31	21.25	3.92 M	5.32 M	5.37 M	20.08 M	
2.34 M		4.54	9.70	12.80	12.01	20.76	4.25 M	5.73 M	5.79 M	19.75 M	
2.73 M		4.82	12.94	11.28	15.37	20.23	4.95 M	6.61 M	6.66 M	19.05 M	
4.32 M		8.15	19.05	16.24	10.64	20.92	7.77 M	9.98 M	10.02 M	16.23 M	
6.47 M		10.92	20.32	22.82	12.62	18.18	11.62 M	14.19 M	14.22 M	12.37 M	
8.63 M	14.62	26.69	39.56	6.65	13.06	15.62 M	18.05 M	18.07 M	8.38 M		

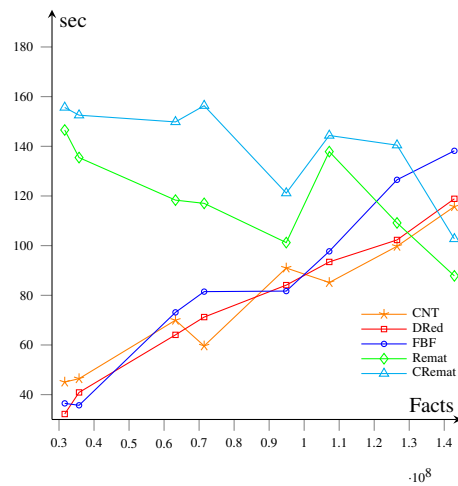
Table 6: [Scalability / deletion / stratified] Deleting 25%, 50%, 75%, and 100% of break-even points with stratified programs

Stratified										
Instance	Facts	Time (s)					Derivations			
		CNT	DRed	FBF	Remat	CRemat	CNT	DRed	FBF	(C)Remat
Reactome _ε	438.95 k	204.18	458.16	201.22	1.08 k	1.23 k	73.60 M	889.84 M	117.54 M	1.57 G
	829.14 k	407.75	750.44	296.36	1.09 k	1.27 k	136.54 M	1.13 G	203.20 M	1.52 G
	877.91 k	385.98	656.19	264.05	1.03 k	1.26 k	144.19 M	1.16 G	213.04 M	1.51 G
	1.07 M	413.55	704.32	306.08	1.03 k	1.30 k	175.43 M	1.25 G	252.56 M	1.49 G
	1.32 M	517.80	908.33	401.98	1.06 k	1.22 k	213.69 M	1.35 G	298.42 M	1.46 G
	1.66 M	601.41	940.44	489.80	1.00 k	1.12 k	266.89 M	1.47 G	359.35 M	1.42 G
	1.76 M	552.50	1.02 k	458.61	1.01 k	1.11 k	281.68 M	1.50 G	375.84 M	1.41 G
	2.15 M	718.65	1.09 k	577.97	1.04 k	1.12 k	341.30 M	1.61 G	439.91 M	1.37 G
	2.49 M	887.56	1.07 k	610.04	925.03	1.03 k	392.43 M	1.69 G	492.84 M	1.33 G
	3.22 M	986.49	1.18 k	646.46	865.80	960.25	499.55 M	1.82 G	598.73 M	1.25 G
	3.32 M	971.31	1.18 k	709.84	862.85	953.10	513.46 M	1.84 G	612.02 M	1.24 G
	4.29 M	1.06 k	1.29 k	711.58	753.00	869.63	651.05 M	1.95 G	739.43 M	1.14 G
Reactome _U	12.19 k	1.73	12.64	8.91	46.96	65.10	67.72 k	107.50 k	100.12 k	86.67 M
	19.81 k	1.81	19.13	19.14	52.72	64.84	109.87 k	174.37 k	162.33 k	86.62 M
	24.39 k	1.84	15.98	16.20	46.90	72.37	135.27 k	214.79 k	199.65 k	86.60 M
	36.58 k	1.96	24.94	24.38	52.70	64.97	205.83 k	325.01 k	302.50 k	86.53 M
	39.62 k	2.06	26.53	38.09	53.41	64.90	222.72 k	351.09 k	327.00 k	86.51 M
	48.77 k	2.05	32.48	32.58	52.79	65.11	274.23 k	431.49 k	402.14 k	86.46 M
	59.43 k	2.15	39.37	56.50	46.91	64.61	333.45 k	523.82 k	488.52 k	86.40 M
	79.24 k	2.66	75.01	75.22	53.12	64.92	440.73 k	692.60 k	646.11 k	86.29 M
	2.17 M	10.50	1.55 k	1.34 k	43.92	59.52	12.26 M	17.22 M	16.46 M	74.48 M
	4.34 M	15.97	2.60 k	2.67 k	37.07	50.50	25.19 M	32.72 M	31.90 M	61.58 M
	6.51 M	21.73	3.74 k	3.64 k	31.76	43.48	39.02 M	47.50 M	47.13 M	47.80 M
	8.68 M	28.20	4.17 k	4.27 k	23.54	33.56	54.13 M	61.95 M	62.54 M	32.74 M
UniProt _L	10.58 M	25.08	28.06	24.90	101.34	128.25	14.39 M	19.32 M	19.10 M	168.35 M
	12.74 M	27.73	30.39	32.81	110.10	125.10	17.35 M	23.01 M	22.86 M	165.39 M
	17.43 M	32.02	35.85	39.52	93.78	145.31	23.81 M	30.90 M	30.91 M	158.93 M
	21.16 M	31.79	45.97	52.49	90.37	141.84	28.96 M	37.09 M	37.22 M	153.78 M
	25.48 M	39.70	53.11	61.22	89.38	136.76	34.98 M	44.20 M	44.49 M	147.76 M
	31.73 M	44.32	53.22	65.64	112.67	123.94	43.74 M	54.34 M	54.86 M	139.00 M
	34.86 M	49.64	62.64	86.95	97.05	142.03	48.14 M	59.36 M	59.99 M	134.60 M
	38.23 M	49.34	64.44	87.77	97.69	119.75	52.91 M	64.73 M	65.48 M	129.83 M
	42.31 M	54.86	75.48	103.03	83.17	123.72	58.73 M	71.20 M	72.10 M	124.01 M
	50.97 M	52.04	91.60	96.91	76.91	111.81	71.17 M	84.72 M	85.93 M	111.57 M
	52.29 M	62.52	88.04	97.88	78.36	106.92	73.09 M	86.76 M	88.03 M	109.65 M
	69.72 M	64.45	117.14	146.36	53.06	68.83	98.73 M	113.12 M	115.02 M	84.01 M
UniProt _R	8.23 M	497.80	754.77	529.22	2.45 k	2.72 k	55.14 M	272.63 M	142.06 M	774.01 M
	10.58 M	636.36	968.99	649.40	2.40 k	2.68 k	70.81 M	306.94 M	166.07 M	762.06 M
	14.42 M	667.64	1.13 k	789.77	2.29 k	2.57 k	96.52 M	357.59 M	203.47 M	742.25 M
	16.47 M	869.31	1.22 k	915.40	2.23 k	2.65 k	110.14 M	382.28 M	222.50 M	731.65 M
	21.16 M	848.21	1.50 k	1.04 k	2.14 k	2.37 k	141.37 M	434.47 M	264.49 M	707.07 M
	24.70 M	1.05 k	1.75 k	1.32 k	2.10 k	2.39 k	164.95 M	470.52 M	295.00 M	688.22 M
	28.85 M	1.06 k	1.86 k	1.44 k	2.05 k	2.34 k	192.49 M	509.50 M	329.53 M	665.90 M
	31.73 M	1.21 k	1.99 k	1.55 k	2.04 k	2.36 k	211.65 M	534.80 M	352.96 M	650.12 M
	32.94 M	1.22 k	2.07 k	1.65 k	2.03 k	2.34 k	219.63 M	544.94 M	362.56 M	643.52 M
	42.31 M	1.44 k	2.51 k	2.05 k	1.96 k	2.18 k	281.67 M	616.67 M	435.10 M	590.97 M
	43.27 M	1.77 k	2.79 k	2.24 k	1.94 k	2.17 k	288.01 M	623.32 M	442.31 M	585.48 M
	57.70 M	2.08 k	3.01 k	2.54 k	1.68 k	1.73 k	382.98 M	709.73 M	546.76 M	500.35 M
UOBM-01K _L	19.90 M	107.19	162.31	95.95	478.13	638.95	62.05 M	161.80 M	116.46 M	730.80 M
	24.13 M	126.52	177.09	111.24	472.84	535.12	75.19 M	182.66 M	136.97 M	717.67 M
	31.53 M	175.47	195.64	130.35	481.87	573.81	98.15 M	214.30 M	171.05 M	694.73 M
	39.81 M	149.60	296.35	205.42	393.88	467.72	123.76 M	245.01 M	207.20 M	669.15 M
	48.26 M	162.54	278.34	198.13	372.13	439.13	149.87 M	273.41 M	242.71 M	643.08 M
	59.71 M	225.99	332.26	196.68	404.85	405.15	185.14 M	309.23 M	289.30 M	607.84 M
	63.07 M	201.45	303.68	269.38	353.96	397.22	195.48 M	319.40 M	302.75 M	597.50 M
	72.40 M	257.97	367.87	222.73	321.99	470.45	224.15 M	346.98 M	339.58 M	568.87 M
	79.61 M	271.80	334.87	278.55	367.81	382.66	246.30 M	367.89 M	367.71 M	546.74 M
	94.60 M	226.24	339.80	281.54	324.25	354.96	292.30 M	410.53 M	425.41 M	500.79 M
	96.53 M	296.63	341.03	268.82	327.34	349.17	298.22 M	415.94 M	432.76 M	494.88 M
	126.13 M	342.93	428.25	375.15	243.76	286.81	389.04 M	497.53 M	544.19 M	404.20 M
UOBM-01K _R	3.86 M	473.96	1.40 k	405.23	3.46 k	4.07 k	39.91 M	1.07 G	494.62 M	2.79 G
	7.71 M	827.65	2.25 k	733.99	3.69 k	3.80 k	79.56 M	1.85 G	864.36 M	2.75 G
	11.57 M	1.24 k	2.76 k	954.04	3.39 k	3.93 k	119.12 M	2.42 G	1.15 G	2.72 G
	15.42 M	1.41 k	3.87 k	1.27 k	3.39 k	4.27 k	158.44 M	2.84 G	1.36 G	2.68 G
	22.89 M	1.93 k	4.07 k	1.37 k	3.32 k	4.45 k	234.27 M	3.37 G	1.65 G	2.60 G
	45.78 M	2.93 k	4.94 k	1.93 k	3.23 k	4.34 k	463.31 M	3.89 G	2.07 G	2.38 G
	48.26 M	2.96 k	4.72 k	1.96 k	3.20 k	4.37 k	487.93 M	3.90 G	2.10 G	2.35 G
	68.66 M	2.93 k	5.66 k	2.75 k	3.23 k	4.04 k	687.38 M	3.92 G	2.27 G	2.15 G
	91.55 M	3.07 k	4.99 k	2.58 k	2.79 k	4.14 k	907.20 M	3.86 G	2.41 G	1.94 G
	96.53 M	2.95 k	4.98 k	2.60 k	2.83 k	4.12 k	954.54 M	3.84 G	2.45 G	1.89 G
	144.79 M	3.40 k	5.23 k	3.32 k	2.52 k	2.52 k	1.41 G	3.68 G	2.73 G	1.44 G
	193.06 M	2.66 k	5.31 k	3.93 k	1.88 k	1.94 k	1.90 G	3.50 G	3.01 G	996.20 M

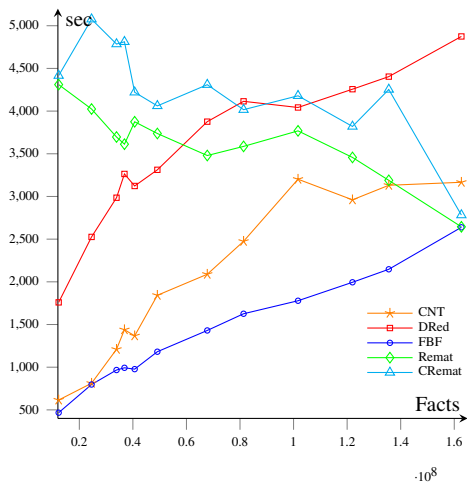
Table 7: [Scalability / deletion / stratified] Deleting 25%, 50%, 75%, and 100% of break-even points with stratified programs (continued from Table 6)



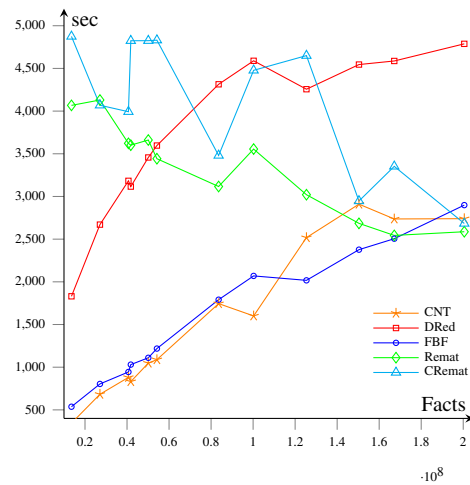
ChEMBL_L unstratified



ChEMBL_L stratified



ChEMBL_R unstratified



ChEMBL_R stratified

Figure 1: Graphical representation of the times in scalability deletion tests

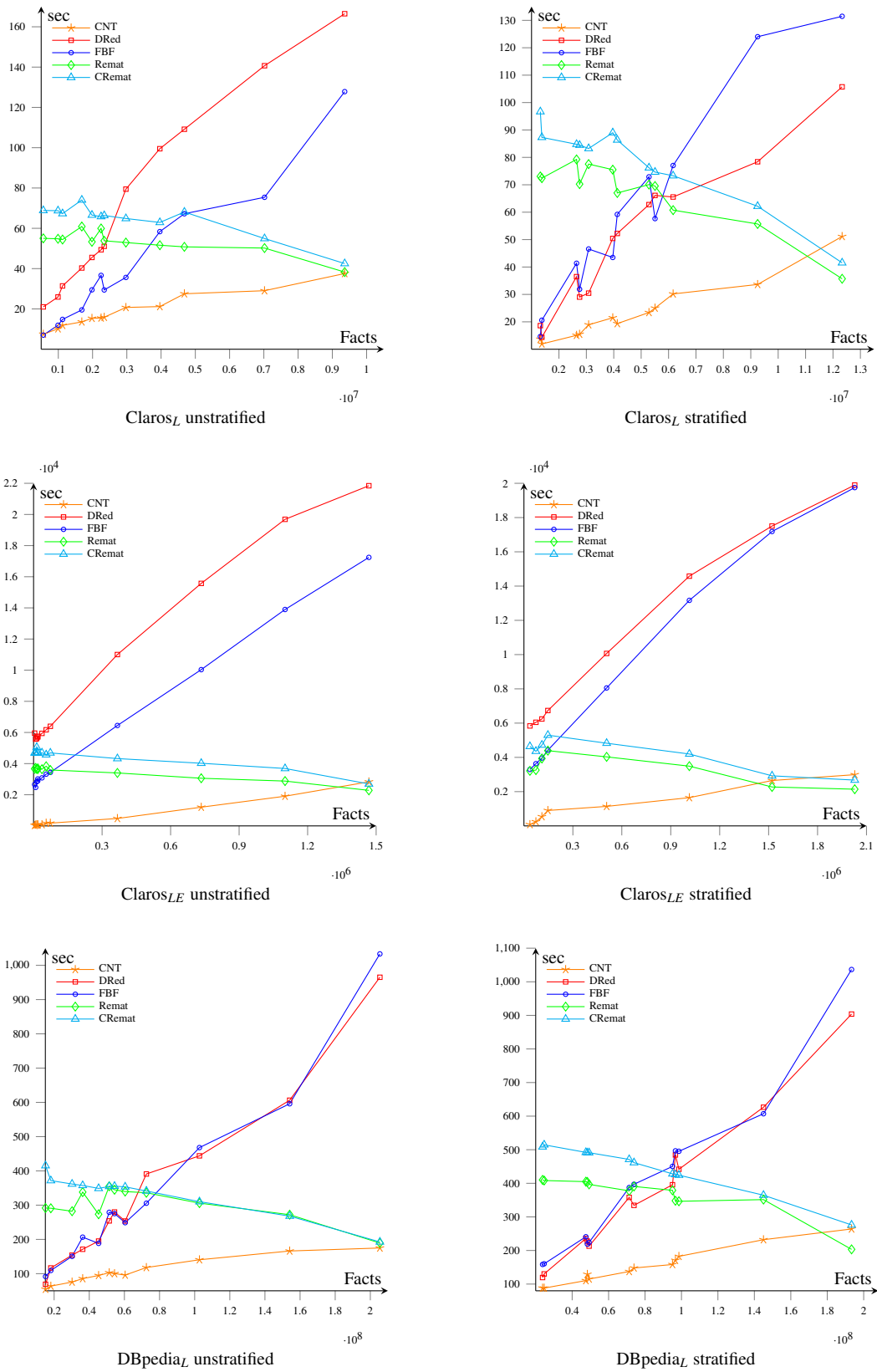


Figure 2: Graphical representation of the times in scalability deletion tests (continued from Figure 1)

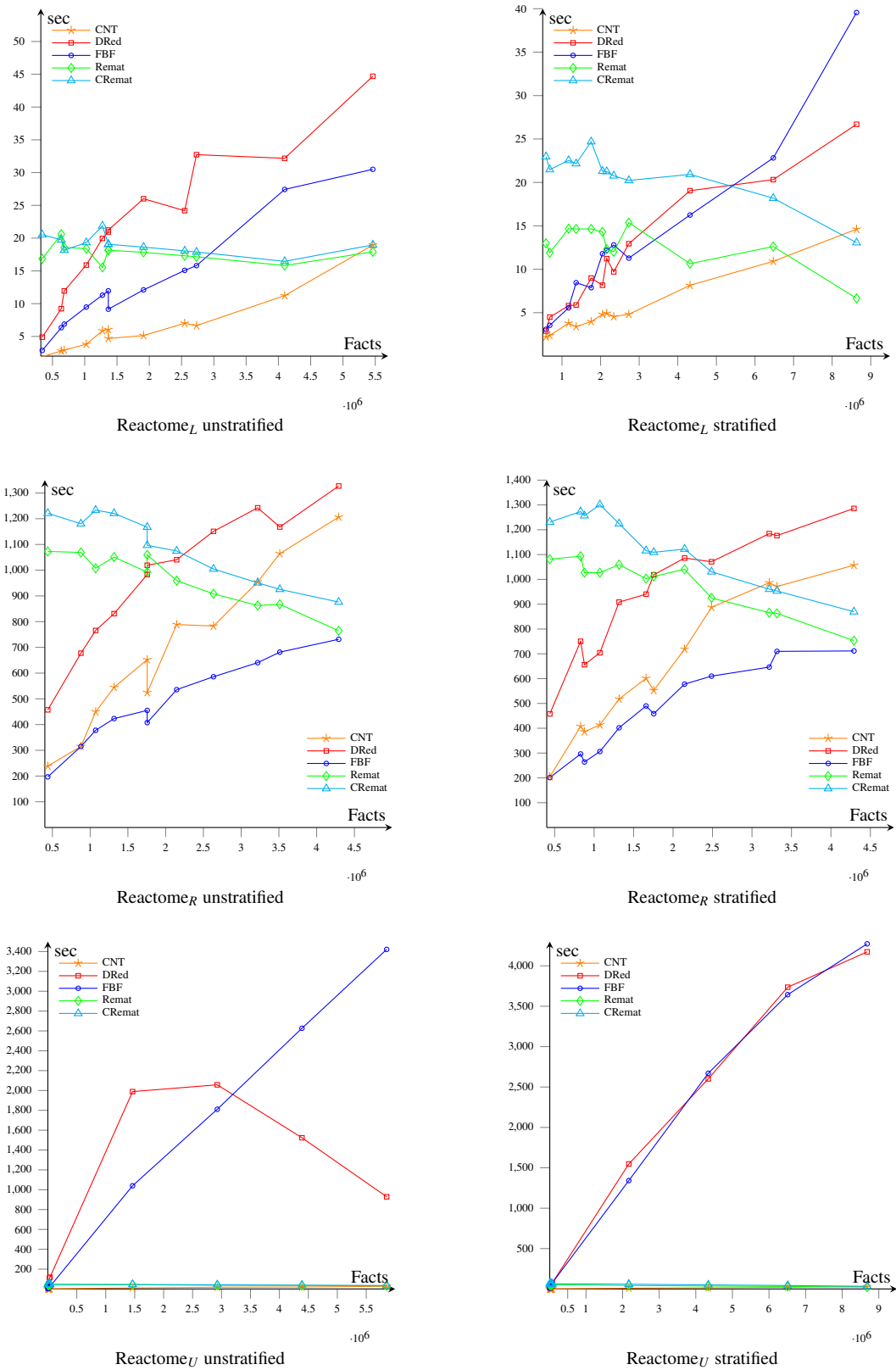
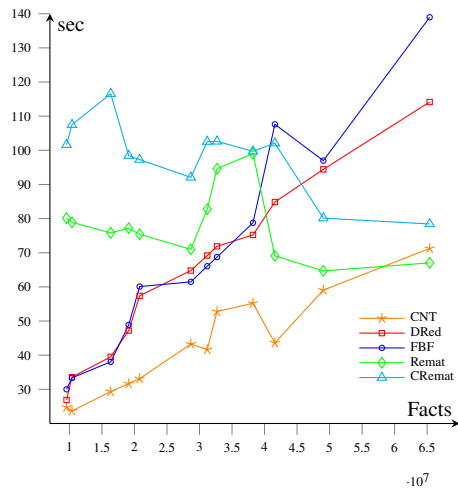
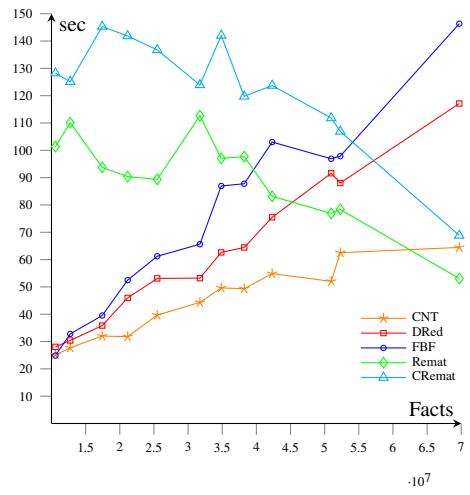


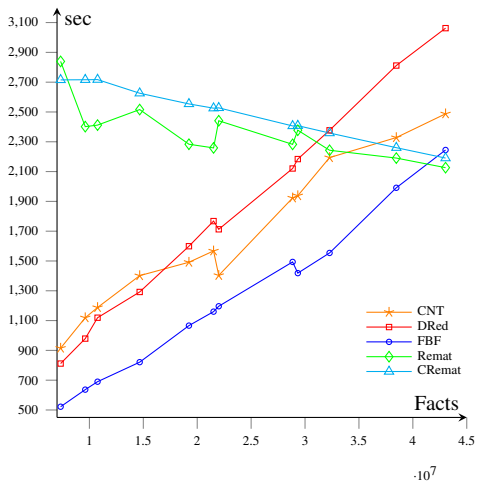
Figure 3: Graphical representation of the times in scalability deletion tests (continued from Figure 2)



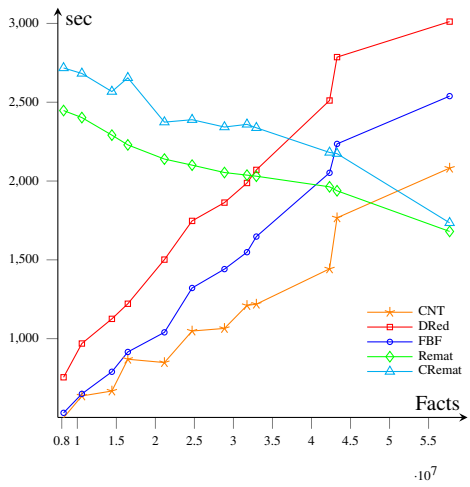
UniProt_L unstratified



UniProt_L stratified

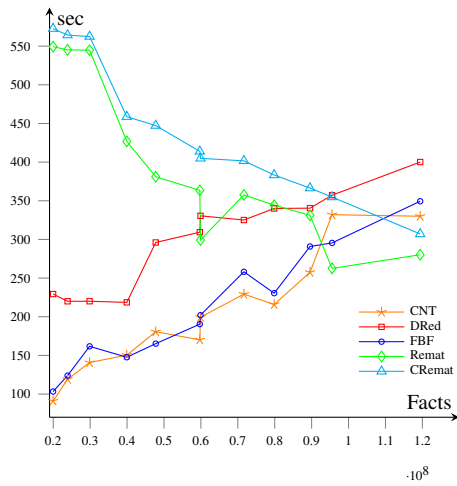


UniProt_R unstratified

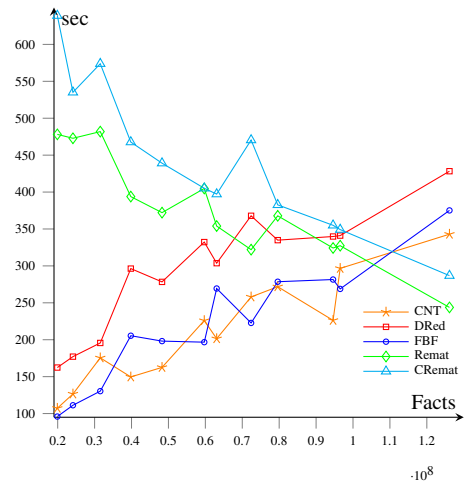


UniProt_R stratified

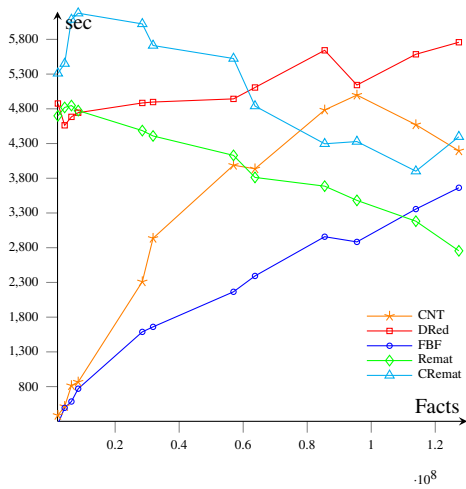
Figure 4: Graphical representation of the times in scalability deletion tests (continued from Figure 3)



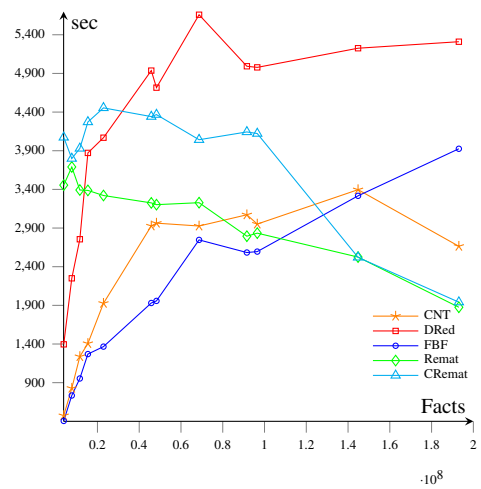
UOBM-01K_L unstratified



UOBM-01K_L stratified



UOBM-01K_R unstratified



UOBM-01K_R stratified

Figure 5: Graphical representation of the times in scalability deletion tests (continued from Figure 4)

Instance	Unstratified				
	Facts	Time (s)		Derivations	
		CNT	DRed/FBF	CNT	DRed/FBF
CHEMBL _L	9.04 M	14.56	4.77	10.55 M	9.68 M
	18.07 M	20.56	9.95	21.09 M	19.35 M
	20.47 M	22.28	11.14	23.89 M	21.91 M
	27.11 M	25.07	12.58	31.62 M	29.00 M
	34.45 M	29.45	17.79	40.17 M	36.83 M
	36.15 M	34.41	13.95	42.13 M	38.63 M
	40.95 M	40.67	15.18	47.71 M	43.75 M
	61.42 M	44.57	25.00	71.46 M	65.51 M
	68.91 M	49.66	27.17	80.12 M	73.45 M
	81.90 M	58.40	31.75	95.14 M	87.21 M
	103.36 M	67.48	44.03	119.89 M	109.88 M
	137.81 M	79.71	52.56	159.46 M	146.11 M
	12.28 M	665.87	154.70	87.80 M	85.43 M
24.57 M	1.29 k	276.16	174.38 M	169.63 M	
33.89 M	1.66 k	345.79	239.26 M	232.70 M	
36.85 M	1.67 k	359.50	259.78 M	252.65 M	
40.67 M	1.75 k	511.78	286.05 M	278.18 M	
49.14 M	2.05 k	713.15	344.10 M	334.58 M	
67.78 M	2.64 k	891.34	470.01 M	456.89 M	
81.33 M	3.40 k	949.88	560.00 M	544.25 M	
101.67 M	3.98 k	1.00 k	692.65 M	672.96 M	
122.00 M	4.60 k	1.54 k	822.55 M	798.92 M	
135.55 M	4.95 k	1.61 k	907.70 M	881.45 M	
162.67 M	4.17 k	1.78 k	1.07 G	1.04 G	
562.05 k	7.38	1.79	4.64 M	3.72 M	
991.05 k	9.24	3.56	8.13 M	6.50 M	
1.12 M	10.00	3.11	9.20 M	7.36 M	
1.69 M	12.88	4.58	13.70 M	10.95 M	
1.98 M	14.08	5.24	16.04 M	12.82 M	
2.25 M	15.34	5.89	18.15 M	14.50 M	
2.34 M	15.79	7.93	18.87 M	15.08 M	
2.97 M	18.69	9.81	23.77 M	18.98 M	
3.96 M	27.59	9.98	31.29 M	24.96 M	
4.68 M	30.14	14.15	36.59 M	29.18 M	
7.02 M	35.39	18.52	53.32 M	42.42 M	
9.36 M	39.52	20.76	69.09 M	54.84 M	
4.59 k	24.95	0.63	2.53 M	730.14 k	
9.18 k	28.89	1.28	3.08 M	1.18 M	
13.76 k	49.07	3.81	14.44 M	12.44 M	
18.35 k	48.84	5.15	14.91 M	12.80 M	
18.35 k	47.32	4.67	14.91 M	12.80 M	
36.71 k	53.68	9.55	27.98 M	25.47 M	
55.06 k	62.32	14.31	45.99 M	38.33 M	
73.41 k	66.84	15.97	48.30 M	40.25 M	
367.06 k	305.73	102.43	585.00 M	325.59 M	
734.11 k	721.51	284.58	1.36 G	964.23 M	
1.10 M	1.74 k	709.88	3.50 G	2.89 G	
1.47 M	2.68 k	1.43 k	5.80 G	5.06 G	
15.11 M	38.13	12.75	14.37 M	12.96 M	
18.13 M	40.59	18.46	17.23 M	15.53 M	
30.21 M	55.55	25.78	28.59 M	25.81 M	
36.25 M	68.63	35.06	34.25 M	30.95 M	
45.32 M	152.61	96.57	42.71 M	38.62 M	
51.36 M	159.07	98.32	48.33 M	43.73 M	
54.38 M	157.22	124.71	51.14 M	46.28 M	
60.42 M	159.81	104.70	56.74 M	51.38 M	
72.51 M	91.66	63.21	67.91 M	61.56 M	
102.72 M	119.00	81.15	95.59 M	86.85 M	
154.08 M	175.79	117.12	142.08 M	129.55 M	
205.44 M	252.06	169.20	188.03 M	171.96 M	
341.41 k	1.89	0.46	708.43 k	607.14 k	
637.09 k	2.40	0.81	1.32 M	1.13 M	
682.82 k	2.53	0.83	1.41 M	1.21 M	
1.02 M	3.49	1.17	2.12 M	1.82 M	
1.27 M	4.16	1.80	2.63 M	2.26 M	
1.37 M	4.40	1.93	2.82 M	2.43 M	
1.37 M	5.65	1.93	2.82 M	2.43 M	
1.91 M	5.18	2.32	3.94 M	3.39 M	
2.55 M	6.49	2.64	5.25 M	4.53 M	
2.73 M	8.21	3.56	5.63 M	4.85 M	
4.10 M	9.52	5.01	8.46 M	7.31 M	
5.46 M	21.38	8.57	11.32 M	9.81 M	

Instance	Unstratified				
	Facts	Time (s)		Derivations	
		CNT	DRed/FBF	CNT	DRed/FBF
Reactome _r	438.95 k	265.57	37.40	66.29 M	45.72 M
	877.91 k	435.22	73.91	131.87 M	91.60 M
	1.07 M	540.56	89.87	161.34 M	112.72 M
	1.32 M	614.20	141.98	197.45 M	138.64 M
	1.76 M	857.96	171.41	262.81 M	186.27 M
	1.76 M	828.52	145.61	262.81 M	186.27 M
	2.15 M	839.81	191.72	321.01 M	229.26 M
	2.63 M	1.17 k	237.94	394.81 M	285.04 M
	3.22 M	1.40 k	280.36	483.57 M	353.31 M
	3.51 M	1.33 k	297.27	528.82 M	388.72 M
	4.29 M	1.61 k	393.02	651.05 M	485.91 M
	3.05 k	1.20	0.03	22.29 k	18.32 k
	6.10 k	1.25	0.05	47.04 k	38.63 k
9.14 k	1.29	0.07	71.07 k	58.70 k	
12.19 k	1.33	0.06	95.18 k	78.94 k	
18.29 k	1.40	0.11	142.50 k	118.25 k	
27.43 k	1.51	0.17	215.85 k	179.27 k	
36.58 k	1.62	0.18	286.81 k	239.26 k	
1.46 M	10.37	5.26	10.94 M	9.18 M	
2.93 M	18.33	7.84	21.39 M	17.97 M	
4.39 M	25.09	10.72	31.44 M	26.43 M	
5.85 M	32.44	17.45	41.16 M	34.64 M	
9.56 M	16.40	9.42	15.46 M	14.05 M	
10.40 M	17.67	10.25	16.81 M	15.27 M	
16.35 M	32.85	19.39	26.32 M	23.90 M	
19.11 M	36.84	21.95	30.70 M	27.88 M	
20.80 M	31.86	15.25	33.37 M	30.30 M	
28.67 M	58.79	31.99	45.74 M	41.52 M	
31.19 M	48.97	33.38	49.68 M	45.08 M	
32.70 M	56.39	33.76	52.02 M	47.20 M	
38.23 M	43.39	25.42	60.59 M	54.97 M	
41.59 M	49.76	32.68	65.78 M	59.66 M	
49.04 M	52.61	32.51	77.19 M	69.98 M	
65.39 M	67.56	47.87	101.89 M	92.29 M	
7.33 M	1.19 k	187.10	53.22 M	41.37 M	
9.62 M	1.35 k	331.07	69.44 M	54.02 M	
10.76 M	1.34 k	261.18	77.48 M	60.31 M	
14.66 M	1.94 k	351.87	104.73 M	81.63 M	
19.23 M	2.09 k	531.90	135.97 M	106.16 M	
21.52 M	2.35 k	690.80	151.39 M	118.30 M	
22.00 M	2.45 k	653.42	154.61 M	120.84 M	
28.85 M	3.17 k	706.73	199.92 M	156.63 M	
29.33 M	3.05 k	900.85	203.05 M	159.11 M	
32.27 M	3.57 k	907.01	222.16 M	174.27 M	
38.47 M	3.36 k	1.18 k	261.56 M	205.64 M	
43.03 M	3.16 k	1.24 k	290.10 M	228.46 M	
19.96 M	86.14	45.04	62.22 M	61.16 M	
23.88 M	79.39	45.43	74.40 M	73.17 M	
29.85 M	105.74	66.26	92.95 M	91.46 M	
39.93 M	130.61	85.81	124.25 M	122.36 M	
47.77 M	154.32	76.62	148.55 M	146.39 M	
59.71 M	201.79	111.45	185.64 M	183.09 M	
59.89 M	173.32	108.12	186.22 M	183.66 M	
71.65 M	208.34	149.38	222.74 M	219.85 M	
79.86 M	319.49	128.11	248.27 M	245.17 M	
89.56 M	373.83	222.08	278.50 M	275.17 M	
95.53 M	383.75	243.61	297.15 M	293.68 M	
119.42 M	444.46	241.61	371.93 M	367.99 M	
2.11 M	236.56	40.15	23.70 M	19.52 M	
4.23 M	514.89	71.36	47.29 M	39.08 M	
6.34 M	670.21	101.07	70.72 M	58.61 M	
8.46 M	739.56	121.87	94.02 M	78.18 M	
28.49 M	2.09 k	405.36	310.24 M	264.85 M	
31.84 M	2.22 k	528.73	345.88 M	296.43 M	
56.97 M	3.07 k	737.02	608.82 M	535.04 M	
63.69 M	3.38 k	999.49	678.46 M	599.65 M	
85.46 M	3.30 k	1.16 k	903.86 M	811.42 M	
95.53 M	3.56 k	1.30 k	1.01 G	910.77 M	
113.94 M	4.24 k	1.72 k	1.20 G	1.09 G	
127.38 M	4.76 k	1.60 k	1.34 G	1.23 G	

Table 8: [Scalability / addition / unstratified] Adding 25%, 50%, 75%, and 100% of break-even points with unstratified programs

Instance	Stratified				
	Facts	Time (s)		Derivations	
		CNT	DRed/BBF	CNT	DRed/BBF
ChEMBL _L	31.63 M	25.41	15.22	33.85 M	33.85 M
	35.72 M	28.19	21.13	38.22 M	38.22 M
	63.26 M	42.59	27.49	67.52 M	67.52 M
	71.45 M	54.11	33.98	76.20 M	76.20 M
	94.89 M	57.93	48.04	101.02 M	101.02 M
	107.17 M	74.15	47.70	113.99 M	113.99 M
	126.52 M	72.47	62.23	134.36 M	134.36 M
	142.90 M	97.31	59.37	151.56 M	151.56 M
	13.56 M	467.84	202.09	102.08 M	99.06 M
	27.11 M	853.58	341.78	201.91 M	196.11 M
40.67 M	1.25 k	540.51	299.91 M	291.44 M	
41.80 M	1.29 k	494.23	308.01 M	299.32 M	
50.13 M	1.48 k	559.76	367.43 M	357.12 M	
54.22 M	1.57 k	621.76	396.43 M	385.32 M	
83.59 M	2.71 k	1.23 k	600.63 M	583.87 M	
100.25 M	2.65 k	1.49 k	713.64 M	693.67 M	
125.39 M	3.06 k	1.39 k	880.37 M	855.58 M	
150.38 M	3.77 k	1.92 k	1.04 G	1.01 G	
167.18 M	3.89 k	2.21 k	1.15 G	1.12 G	
200.51 M	4.19 k	2.27 k	1.35 G	1.31 G	
Claros _L	1.32 M	8.40	6.49	9.42 M	9.42 M
	1.38 M	8.71	8.03	9.81 M	9.81 M
	2.64 M	15.10	12.38	18.50 M	18.50 M
	2.75 M	15.68	15.72	19.23 M	19.23 M
	3.08 M	27.96	23.37	21.43 M	21.43 M
	3.96 M	28.23	24.90	27.21 M	27.21 M
	4.13 M	28.75	25.32	28.27 M	28.27 M
	5.29 M	33.23	35.56	35.59 M	35.59 M
	5.51 M	39.60	29.43	36.96 M	36.96 M
	6.17 M	36.56	38.09	41.00 M	41.00 M
	9.25 M	48.23	47.46	58.98 M	58.98 M
	12.33 M	55.34	48.02	75.48 M	75.48 M
	Claros _L E	36.71 k	120.91	8.38	26.41 M
73.41 k		239.01	12.25	44.96 M	38.12 M
110.12 k		465.83	21.05	73.88 M	62.55 M
146.82 k		485.47	22.85	102.69 M	87.53 M
507.00 k		705.89	108.89	860.01 M	475.55 M
1.01 M		1.35 k	659.64	3.10 G	2.58 G
1.52 M		2.21 k	993.25	5.35 G	4.56 G
2.03 M		2.76 k	1.23 k	7.14 G	5.59 G
23.77 M		48.66	37.62	21.05 M	20.25 M
24.65 M		47.21	42.26	21.82 M	20.99 M
47.54 M	80.68	113.15	41.84 M	40.33 M	
48.34 M	82.89	55.83	42.54 M	41.01 M	
49.30 M	82.22	53.85	43.37 M	41.81 M	
71.30 M	120.12	90.31	62.45 M	60.32 M	
73.94 M	127.16	81.30	64.73 M	62.53 M	
95.07 M	158.02	114.07	82.89 M	80.19 M	
96.68 M	151.17	120.65	84.26 M	81.53 M	
98.59 M	179.69	137.32	85.90 M	83.12 M	
145.01 M	219.48	179.17	125.42 M	121.68 M	
193.35 M	262.97	266.23	166.23 M	161.59 M	
Reactome _L	585.27 k	1.69	2.47	1.11 M	1.11 M
	682.82 k	1.92	2.15	1.29 M	1.29 M
	1.17 M	3.03	2.43	2.20 M	2.20 M
	1.37 M	3.46	2.98	2.56 M	2.56 M
	1.76 M	4.74	4.11	3.27 M	3.27 M
	2.05 M	7.52	6.85	3.80 M	3.80 M
	2.16 M	6.07	5.82	4.00 M	4.00 M
	2.34 M	6.00	6.34	4.33 M	4.33 M
	2.73 M	7.39	6.67	5.03 M	5.03 M
	4.32 M	7.86	6.80	7.85 M	7.85 M
	6.47 M	9.87	9.33	11.70 M	11.70 M
	8.63 M	14.20	16.61	15.62 M	15.62 M

Instance	Stratified				
	Facts	Time (s)		Derivations	
		CNT	DRed/BBF	CNT	DRed/BBF
Reactome _r	438.95 k	308.85	47.31	66.29 M	45.72 M
	829.14 k	416.67	70.76	124.68 M	86.54 M
	877.91 k	402.27	97.84	131.87 M	91.60 M
	1.07 M	597.03	89.88	161.34 M	112.72 M
	1.32 M	624.68	138.49	197.45 M	138.64 M
	1.66 M	900.55	140.77	248.39 M	175.71 M
	1.76 M	874.61	149.10	262.81 M	186.27 M
	2.15 M	1.06 k	232.78	321.01 M	229.26 M
	2.49 M	1.20 k	269.67	372.43 M	268.00 M
	3.22 M	1.61 k	274.68	483.57 M	353.31 M
	3.32 M	1.45 k	362.07	498.46 M	364.93 M
	4.29 M	1.45 k	504.90	651.05 M	485.91 M
	Reactome _u	12.19 k	0.79	0.11	91.13 k
19.81 k		0.83	0.19	148.07 k	147.10 k
24.39 k		0.86	0.20	181.42 k	180.19 k
36.58 k		0.93	0.27	275.09 k	273.26 k
39.62 k		1.06	0.30	296.90 k	294.95 k
48.77 k		1.00	0.36	365.42 k	363.06 k
59.43 k		1.06	0.51	444.25 k	441.43 k
79.24 k		1.18	0.55	589.72 k	585.91 k
2.17 M		11.89	13.24	15.18 M	15.10 M
4.34 M		20.32	19.25	29.00 M	28.88 M
6.51 M		29.21	28.85	41.91 M	41.78 M
8.68 M		35.06	31.13	54.13 M	53.99 M
UniProt _L		10.58 M	16.12	11.21	15.65 M
	12.74 M	17.78	13.96	18.82 M	18.82 M
	17.43 M	22.96	21.06	25.64 M	25.64 M
	21.16 M	34.67	24.77	31.03 M	31.03 M
	25.48 M	34.96	33.44	37.25 M	37.25 M
	31.73 M	49.81	48.83	46.16 M	46.16 M
	34.86 M	51.55	44.37	50.59 M	50.59 M
	38.23 M	55.74	47.00	55.33 M	55.33 M
	42.31 M	48.19	43.19	61.07 M	61.06 M
	50.97 M	55.05	51.67	73.10 M	73.10 M
	52.29 M	55.72	49.38	74.92 M	74.92 M
	69.72 M	79.83	60.77	98.73 M	98.73 M
	UniProt _r	8.23 M	470.94	224.59	60.63 M
10.58 M		610.53	270.36	77.44 M	63.03 M
14.42 M		688.36	403.47	104.64 M	85.27 M
16.47 M		879.38	354.90	118.88 M	96.92 M
21.16 M		1.08 k	517.03	151.08 M	123.31 M
24.70 M		1.22 k	533.09	175.00 M	142.96 M
28.85 M		1.30 k	638.62	202.54 M	165.62 M
31.73 M		1.57 k	689.23	221.48 M	181.23 M
32.94 M		1.53 k	747.72	229.29 M	187.68 M
42.31 M		2.49 k	958.79	289.07 M	237.08 M
43.27 M		2.48 k	1.16 k	295.08 M	242.05 M
57.70 M		2.56 k	1.52 k	382.98 M	314.97 M
UOBM-01K _L		19.90 M	64.06	38.06	61.11 M
	24.13 M	110.68	46.00	74.09 M	73.93 M
	31.53 M	147.36	57.94	96.81 M	96.61 M
	39.81 M	167.51	84.69	122.19 M	121.96 M
	48.26 M	153.30	87.76	148.14 M	147.88 M
	59.71 M	189.01	139.83	183.32 M	183.01 M
	63.07 M	187.25	115.94	193.66 M	193.34 M
	72.40 M	208.92	169.84	222.37 M	222.03 M
	79.61 M	225.21	144.31	244.62 M	244.26 M
	94.60 M	340.04	247.00	290.96 M	290.56 M
	96.53 M	320.57	305.40	296.94 M	296.53 M
	126.13 M	398.17	310.47	389.04 M	388.57 M
	UOBM-01K _r	3.86 M	464.51	88.00	45.32 M
7.71 M		641.18	160.70	88.82 M	73.10 M
11.57 M		1.25 k	226.23	130.90 M	109.15 M
15.42 M		1.42 k	388.26	171.77 M	144.90 M
22.89 M		1.72 k	562.02	248.35 M	213.68 M
45.78 M		1.88 k	1.09 k	470.86 M	423.07 M
48.26 M		1.72 k	1.25 k	494.48 M	445.86 M
68.66 M		2.44 k	1.64 k	686.50 M	633.25 M
91.55 M		2.96 k	2.10 k	901.98 M	846.02 M
96.53 M		3.26 k	1.96 k	949.10 M	892.73 M
144.79 M		3.22 k	3.16 k	1.41 G	1.35 G
193.06 M		3.03 k	3.32 k	1.90 G	1.84 G

Table 9: [Scalability / addition / stratified] Adding 25%, 50%, 75%, and 100% of break-even points with stratified programs