

Client frequencies:

client\_0 freq: [1357 1480 1603 1726 1850 1973 2096 2220 2343 2466]  
client\_1 freq: [243 265 287 309 331 353 375 397 419 441]  
client\_2 freq: [3135 3420 3705 3990 4275 4560 4845 5130 5415 5700]  
client\_3 freq: [1970 2149 2328 2507 2686 2865 3045 3224 3403 3582]

	Accuracy	Loss
Norm	<div><pre>for i in range(len(pdfes)):     for j in range(i+1,len(pdfes)):         print(i," and ", j , stats.was</pre></div> <div>0 and 1 1.1316950932567083 0 and 2 16.789943005620493 0 and 3 9.708723438735062 1 and 2 17.892796430680484 1 and 3 10.80858591890214 2 and 3 7.084210511778343</div> <div>shape, loc, scale = stats.gamma.fit(gl pdf_global = stats.gamma.pdf(global_lo</div> <div><pre>for i in range(len(pdfes)):     print(i," and global: " , stats.wa</pre></div> <div>0 and global: 1751631362.9410932 1 and global: 1751631362.5086415 2 and global: 1751631376.031605 3 and global: 1751631370.533872</div>	<div><pre>for i in range(len(pdfes)):     for j in range(i+1,len(pdfes)):         print(i," and ", j , stats.wasserst</pre></div> <div>0 and 1 1.589712839613521 0 and 2 2.4618447346270234 0 and 3 1.2872063294604323 1 and 2 4.051557574240545 1 and 3 2.872169320055356 2 and 3 1.1793882541851883</div> <div>shape, loc, scale = stats.gamma.fit(global_ pdf_global = stats.gamma.pdf(global_loss_li</div> <div><pre>for i in range(len(pdfes)):     print(i," and global: " , stats.wassers</pre></div> <div>0 and global: 1751631362.639029 1 and global: 1751631363.1257498 2 and global: 1751631364.5361264 3 and global: 1751631363.6473703</div>
Gamma	<div><pre>print(i," and ", j , stats.wasserstein_</pre></div> <div>0 and 1 54717527503560.66 0 and 2 2619302465.973565 0 and 3 32223122.089287713 1 and 2 54714908201097.61 1 and 3 54717495280441.984 2 and 3 2587079344.469823</div> <div>shape, loc, scale = stats.gamma.fit(global_loss_ pdf_global = stats.gamma.pdf(global_loss_list, s</div> <div><pre>for i in range(len(pdfes)):     print(i," and global: " , stats.wasserstein_</pre></div> <div>0 and global: 1751631312.3499918 1 and global: 54715775872251.2 2 and global: 867671153.9460524 3 and global: 1719408190.8830602</div>	<div>0 and 1 23293.67582116507 0 and 2 2642966087.701834 0 and 3 86836338.94386089 1 and 2 2642989381.0476484 1 and 3 86859632.27898744 2 and 3 2556129748.768661</div> <div>shape, loc, scale = stats.gamma.fit(global_ pdf_global = stats.gamma.pdf(global_loss_li</div> <div><pre>for i in range(len(pdfes)):     print(i," and global: " , stats.wassers</pre></div> <div>0 and global: 1751608069.7465165 1 and global: 1751631363.2008057 2 and global: 891358018.1219131 3 and global: 1664771762.0599706</div>
Lognorm	<div><pre>for i in range(len(pdfes)):     for j in range(i+1,len(pdfes)):         print(i," and ", j , stats.wasserste</pre></div> <div>0 and 1 55254380325754.164 0 and 2 16.07790006404852 0 and 3 9.049841030666352 1 and 2 55254380325751.23 1 and 3 55254380325752.18 2 and 3 7.04678114945583</div> <div>shape, loc, scale = stats.gamma.fit(global_l pdf_global = stats.gamma.pdf(global_loss_lis</div> <div><pre>for i in range(len(pdfes)):     print(i," and global: " , stats.wasserst</pre></div> <div>0 and global: 1751631363.2840414 1 and global: 55252628694393.89 2 and global: 1751631376.009677 3 and global: 1751631370.5441334</div>	<div>0 and 1 1.5962046520864261 0 and 2 1152032554.6114473 0 and 3 828319716.0062158 1 and 2 1152032555.8887386 1 and 3 828319717.1620903 2 and 3 323712838.75998193</div> <div>shape, loc, scale = stats.gamma.fit(global_loss_ pdf_global = stats.gamma.pdf(global_loss_list, s</div> <div><pre>for i in range(len(pdfes)):     print(i," and global: " , stats.wasserstein_</pre></div> <div>0 and global: 1751631362.6457176 1 and global: 1751631363.124102 2 and global: 599598829.1823409 3 and global: 923311661.1644437</div>

Beta	<pre>for i in range(len(pdfs)):     for j in range(i+1,len(pdfs)):         print(i," and ", j , stats.wasserste</pre> <pre>0 and 1 472447182945.1053 0 and 2 1633923312858.529 0 and 3 30858645448885.793 1 and 2 1161476130514.6243 1 and 3 30386198265965.234 2 and 3 29224722136028.8</pre> <pre>shape, loc, scale = stats.gamma.fit(global_loss_list) pdf_global = stats.gamma.pdf(global_loss_list, loc=loc, scale=scale)  for i in range(len(pdfs)):     print(i," and global: " , stats.wasserst</pre> <pre>0 and global: 1751371635.8632 1 and global: 470695811311.50385 2 and global: 1632171941224.898 3 and global: 30856894077252.176</pre>	<pre>0 and 1 1326423760265.2085 0 and 2 2797271921268.4023 0 and 3 4987275998778.207 1 and 2 1470848161004.5254 1 and 3 3660852238514.3296 2 and 3 2190004078257.9138</pre> <pre>shape, loc, scale = stats.gamma.fit(global_loss_list) pdf_global = stats.gamma.pdf(global_loss_list, loc=loc, scale=scale)  for i in range(len(pdfs)):     print(i," and global: " , stats.wasserste</pre> <pre>0 and global: 17268452031.729095 1 and global: 1343692212296.3552 2 and global: 2814540373299.788 3 and global: 5004544450809.597</pre>
Burr	<pre>0 and 1 472447182945.1053 0 and 2 1633923312858.529 0 and 3 30858645448885.793 1 and 2 1161476130514.6243 1 and 3 30386198265965.234 2 and 3 29224722136028.8</pre> <pre>shape, loc, scale = stats.gamma.fit(global_loss_list) pdf_global = stats.gamma.pdf(global_loss_list, loc=loc, scale=scale)  for i in range(len(pdfs)):     print(i," and global: " , stats.wasser</pre> <pre>0 and global: 1751371635.8632 1 and global: 470695811311.50385 2 and global: 1632171941224.898 3 and global: 30856894077252.176</pre>	<pre>0 and 1 1326423760265.2085 0 and 2 2797271921268.4023 0 and 3 4987275998778.207 1 and 2 1470848161004.5254 1 and 3 3660852238514.3296 2 and 3 2190004078257.9138</pre> <pre>shape, loc, scale = stats.gamma.fit(global_loss_list) pdf_global = stats.gamma.pdf(global_loss_list, loc=loc, scale=scale)  for i in range(len(pdfs)):     print(i," and global: " , stats.wasserstein</pre> <pre>0 and global: 17268452031.729095 1 and global: 1343692212296.3552 2 and global: 2814540373299.788 3 and global: 5004544450809.597</pre>

# NON IID DISTRIBUTIONS (4 clients : gender-income)

client\_0 freq: [1973 2096 2220 2343 2466 2589 2713 2836 2959 3083]  
 client\_1 freq: [353 375 397 419 441 463 485 507 529 551]  
 client\_2 freq: [4560 4845 5130 5415 5700 5985 6270 6555 6840 7125]  
 client\_3 freq: [2865 3045 3224 3403 3582 3761 3940 4119 4298 4477]

Distribution	frequency	accuracy	Loss
Gamma	0 and 1 0.0034349427373413384 0 and 2 0.00042332799344532235 0 and 3 0.00023232772854376901 1 and 2 0.003858270730786661 1 and 3 0.003667270465885108 2 and 3 0.00019100026490155328  0 and global: 0.0005951170688163395 1 and global: 0.004030059806157678 2 and global: 0.00017178907537101712 3 and global: 0.00036278934027257045	0 and 1 96611745126.51799 0 and 2 26331468952.791576 0 and 3 10325938315.564121 1 and 2 70280276178.07014 1 and 3 86285806815.72081 2 and 3 16005530637.711647  0 and global: 71717033119.61592 1 and global: 24894712009.077194 2 and global: 45385564169.90277 3 and global: 61391094807.61442	0 and 1 3571334.6290192525 0 and 2 3527876.6556697614 0 and 3 3375884237.1164727 1 and 2 43488.81355166581 1 and 3 3379455571.689611 2 and 3 3379412087.511244  0 and global: 100025094.95119059 1 and global: 103596429.5762785 2 and global: 103552956.95220673 3 and global: 3275859142.165282
Norm	0 and 1 0.003434916180979071 0 and 2 0.00042333433612756695 0 and 3 0.00023233377600585708 1 and 2 0.0038582505171066376 1 and 3 0.003667249956984929 2 and 3 0.00019100056012170982  0 and global: 0.0005951218430858042 1 and global: 0.004030038024064876 2 and global: 0.00017178750695823704 3 and global: 0.00036278806707994697	0 and 1 1.8533511277924637 0 and 2 12.550186731287384 0 and 3 8.844801561217773 1 and 2 14.389581675430298 1 and 3 10.680811536495323 2 and 3 3.7087701389349754  0 and global: 45.57258011544753 1 and global: 47.41197505959046 2 and global: 33.02239338416016 3 and global: 36.73116352309513	0 and 1 1.9439247483985005 0 and 2 2.2940469778074366 0 and 3 1.3069255004588132 1 and 2 4.237971726205937 1 and 3 3.2498012081393775 2 and 3 0.9881705180665596  0 and global: 4.964483702557023 1 and global: 6.908408450955523 2 and global: 2.7417408911300143 3 and global: 3.658607242816146

Lognorm	0 and 1 5660592.193859114 0 and 2 58726.068773617095 0 and 3 58834.618926491945 1 and 2 5719318.262632731 1 and 3 5719426.812785607 2 and 3 108.55021695542531  0 and global: 59708.31306807256 1 and global: 5720300.506927187 2 and global: 982.244294455473 3 and global: 873.6941415806158	0 and 1 3463538508071.1514 0 and 2 11.92890537244354 0 and 3 8.301989770435537 1 and 2 3463538508076.3716 1 and 3 3463538508074.5317 2 and 3 3.637997000153498  0 and global: 45.35031292556467 1 and global: 3463538508096.0435 2 and global: 33.440059079099576 3 and global: 37.078056079253074	0 and 1 1.9443768895059936 0 and 2 42.594144025410536 0 and 3 198758847484.76242 1 and 2 44.479917786526045 1 and 3 198758847485.8803 2 and 3 198758847476.48886  0 and global: 6.273941466842511 1 and global: 8.218318356348504 2 and global: 36.908357975239106 3 and global: 198758847483.9256
Beta	0 and 1 0.0037600727311337865 0 and 2 0.0010872173535729818 0 and 3 0.0007812811823525462 1 and 2 0.004730229869492611 1 and 3 0.004424293698272176 2 and 3 0.0003059361712204356  0 and global: 0.0013583023787272718 1 and global: 0.0050013148946469015 2 and global: 0.00027108502515429 3 and global: 0.0005770211963747256	0 and 1 854113097152899.4 0 and 2 23350576942951.473 0 and 3 28716477394886.68 1 and 2 830762520209948.1 1 and 3 825396619758256.6 2 and 3 5365900451935.387  0 and global: 142560324721048.28 1 and global: 711552772431869.8 2 and global: 119209747778098.02 3 and global: 113843847326399.7	0 and 1 1668988051430.631 0 and 2 33993429924.851116 0 and 3 5102665534436.631 1 and 2 1702981481355.2244 1 and 3 3433677483008.0156 2 and 3 5136658964360.713  0 and global: 36162306096.86395 1 and global: 1705150357527.4949 2 and global: 2168876172.2707167 3 and global: 5138827840527.401
Burr	0 and 1 0.0033262394877202617 0 and 2 0.00040832023076190096 0 and 3 0.00022358570628453592 1 and 2 0.003734559718482163 1 and 3 0.003549825194004798 2 and 3 0.00018473452447736509  0 and global: 0.0005744299617219128 1 and global: 0.0039006694494421747 2 and global: 0.00016610973096001176 3 and global: 0.0003508442554373769	0 and 1 802754617320.8098 0 and 2 40.223243866821676 0 and 3 45.69219771091308 1 and 2 802754617348.5286 1 and 3 802754617351.9719 2 and 3 7.6786916197144635  0 and global: 43.05023143195532 1 and global: 802754617350.6935 2 and global: 3.4811377511131445 3 and global: 5.862382991576778	0 and 1 0.972495068914641 0 and 2 29.11436567242299 0 and 3 24.301778376477447 1 and 2 29.84226937755347 1 and 3 24.928362496047953 2 and 3 4.9139068815055165  0 and global: 4.580701327257708 1 and global: 5.459503317743751 2 and global: 25.287826120400084 3 and global: 20.688757770350925

Single-Batch Distributions

**client\_0**  
loss: [0.04675943 0.22334448 0.3253662 0.3327828 0.32753864 0.30964363 0.30064547 0.2881389 0.30844659 0.29107651]  
freq: [7895 7895 7895 7895 7895 7895 7895 7895 7895 7895]  
acc [0.99366689 0.91247624 0.87321091 0.86865103 0.87473083 0.8781507 0.88081062 0.88777709 0.87941736 0.88448387]  
**client\_1**  
loss: [0.44730943 1.00544584 1.24900603 1.09015918 1.2009567 1.20884359 1.11642206 1.12442636 1.07541847 1.10691833]  
freq: [1435 1435 1435 1435 1435 1435 1435 1435 1435 1435]  
acc [0.89128917 0.49756098 0.37770036 0.50522649 0.44808361 0.43135887 0.47804877 0.47456446 0.50662023 0.48989546]  
**client\_2**  
loss: [0.03972216 0.02067855 0.01909248 0.02059607 0.02184644 0.02210405 0.0240159 0.02484704 0.02478325 0.02511534]  
freq: [18259 18259 18259 18259 18259 18259 18259 18259 18259 18259]  
acc [0.99611151 0.99989045 1. 1. 1. 0.99994522 0.99994522 0.99989045 0.99989045 0.99994522]  
**client\_3**  
loss: [0.10719391 0.02389912 0.0262641 0.02447494 0.02615622 0.02859946 0.0283988 0.02978892 0.03104771 0.03117665]  
freq: [11484 11484 11484 11484 11484 11484 11484 11484 11484 11484]  
acc [0.98885405 0.99965167 0.99982584 0.99991292 0.99991292 0.99991292 0.99982584 0.99982584 0.99973875 0.99973875]

Distribution	Accuracy	Loss
Gamma	0 and 1 5052963785.6386385	0 and 1 9.308714649162779
	0 and 2 110213288418.12776	0 and 2 11341.601002166437
	0 and 3 107785490295.07877	0 and 3 4854633.798060776
	1 and 2 105160324655.85822	1 and 2 11337.843632987884
	1 and 3 102732526518.81839	1 and 3 4854630.040691596
	2 and 3 2427798137.039818	2 and 3 4843350.173976158
	0 and global: 2170527.9642331777	0 and global: 6.269837293033752
	1 and global: 5050793767.680869	1 and global: 13.414506742209406
	2 and global: 110211118394.07294	2 and global: 11335.51733712475
	3 and global: 107783320275.70663	3 and global: 4854628.48416662
Norm	0 and 1 6.675711374677921	0 and 1 2.4057410423621155
	0 and 2 286.15857542033956	0 and 2 54.555577640223106
	0 and 3 94.18641588484508	0 and 3 10.220130044593963
	1 and 2 292.8342867950175	1 and 2 56.96131868258523
	1 and 3 100.86212725952299	1 and 3 12.62587108695608
	2 and 3 191.97215953549448	2 and 3 44.33544759562915
	0 and global: 1091.4961367516255	0 and global: 6.002736887598183
	1 and global: 1098.1718481263035	1 and global: 8.408477929960299
	2 and global: 805.337561331286	2 and global: 49.369079300209755
	3 and global: 997.3097208667805	3 and global: 5.281169731086335

Lognorm	<div>0 and 1 20.848571350665924</div> <div>0 and 2 68.43472489365098</div> <div>0 and 3 78.13086556288947</div> <div>1 and 2 89.2832962443169</div> <div>1 and 3 98.97943691355539</div> <div>2 and 3 84.68423389603093</div> <div>0 and global: 1078.2990797532764</div> <div>1 and global: 1099.1476511039423</div> <div>2 and global: 1015.7192759065204</div> <div>3 and global: 1000.1682141903868</div>	<div>0 and 1 2.396580615537854</div> <div>0 and 2 88.29790770059965</div> <div>0 and 3 79.39303651314505</div> <div>1 and 2 90.69448831613751</div> <div>1 and 3 81.7896171286829</div> <div>2 and 3 32.77755483496762</div> <div>0 and global: 6.029857038491165</div> <div>1 and global: 8.426437654029018</div> <div>2 and global: 82.74258355514098</div> <div>3 and global: 74.39622381424006</div>
Beta	<div>0 and 1 1521748664975.6758</div> <div>0 and 2 210969340692530.25</div> <div>0 and 3 30110798953388.42</div> <div>1 and 2 212491089357505.84</div> <div>1 and 3 31632547618362.84</div> <div>2 and 3 180858541739143.1</div> <div>0 and global: 308744075720725.44</div> <div>1 and global: 310265824385701.06</div> <div>2 and global: 385995910701328.75</div> <div>3 and global: 325709730121620.6</div>	<div>0 and 1 2314866766485.9023</div> <div>0 and 2 10624594890126.223</div> <div>0 and 3 4839861950005.761</div> <div>1 and 2 12939461656612.125</div> <div>1 and 3 7154728716486.841</div> <div>2 and 3 5784732940125.554</div> <div>0 and global: 4391291160872.917</div> <div>1 and global: 2076424394391.9973</div> <div>2 and global: 15015886050987.99</div> <div>3 and global: 9231153110878.678</div>
Burr	<div>0 and 1 12.557451473326129</div> <div>0 and 2 73.81034375812625</div> <div>0 and 3 58.98077024145226</div> <div>1 and 2 86.36779523145239</div> <div>1 and 3 71.5382217147784</div> <div>2 and 3 14.82957351667399</div> <div>0 and global: 37.68286544026416</div> <div>1 and global: 50.24031691359029</div> <div>2 and global: 36.12747831786209</div> <div>3 and global: 30.816360768026254</div>	<div>0 and 1 5.9800054838741215</div> <div>0 and 2 85.11174054509708</div> <div>0 and 3 14009025718706.021</div> <div>1 and 2 91.09174602897119</div> <div>1 and 3 14009025718712.0</div> <div>2 and 3 14009025718739.184</div> <div>0 and global: 2.2096049476649746</div> <div>1 and global: 7.564232292959562</div> <div>2 and global: 83.77601115000714</div> <div>3 and global: 14009025718705.12</div>

**NON IID DISTRIBUTIONS (8 clients : gender-race(white/black)-income)**

client\_0 freq: [ 20 39 58 77 97 116 135 154 173 193]  
client\_1 freq: [ 2 3 5 6 8 9 10 12 13 15]  
client\_2 freq: [ 144 287 431 574 718 861 1005 1148 1291 1435]  
client\_3 freq: [ 27 54 81 107 134 161 188 214 241 268]  
client\_4 freq: [ 2 3 5 6 8 9 10 12 13 15]  
client\_5 freq: [ 144 287 431 574 718 861 1005 1148 1291 1435]  
client\_6 freq: [ 27 54 81 107 134 161 188 214 241 268]  
client\_7 freq: [ 27 54 81 107 134 161 188 214 241 268]

Distribution	frequency	accuracy	Loss
Gamma	0 and 1 0.060070629175055255	0 and 1 1.1086612543426392e+24	0 and 1 0.10370943321177582
	0 and 2 0.004149363344507472	0 and 2 71105.23308279332	0 and 2 4010091.851041004
	0 and 3 0.0013511973295201305	0 and 3 64435.1487504472	0 and 3 1546403.887152391
	0 and 4 0.060070629175055255	0 and 4 7.290130207078613e+25	0 and 4 0.10433427298681279
	0 and 5 0.004149363344507472	0 and 5 82004.49655340843	0 and 5 56605722.14149832
	0 and 6 0.0013511973295201305	0 and 6 94069.37085582869	0 and 6 12291749.25598789
	0 and 7 0.0013511973295201305	0 and 7 3701.1612710988925	0 and 7 6599176074.937812
	1 and 2 0.06421999251956272	1 and 2 1.1086612543426392e+24	1 and 2 4010091.9488191605
	1 and 3 0.06142182650457538	1 and 3 1.1086612543426392e+24	1 and 3 1546403.9849305477
	1 and 4 0.0	1 and 4 7.17926408164435e+25	1 and 4 0.0013789201741964355
	1 and 5 0.06421999251956272	1 and 5 1.1086612543426392e+24	1 and 5 56605722.239276476
	1 and 6 0.06142182650457538	1 and 6 1.1086612543426392e+24	1 and 6 12291749.353766046
	1 and 7 0.06142182650457538	1 and 7 1.1086612543426392e+24	1 and 7 6599176075.03559
	2 and 3 0.002798166014987343	2 and 3 6670.481485143623	2 and 3 2463687.9669454126
	2 and 4 0.06421999251956272	2 and 4 7.290130207078613e+25	2 and 4 4010091.949681644
	2 and 5 0.0	2 and 5 10899.270813394027	2 and 5 52595630.41933119
	2 and 6 0.002798166014987343	2 and 6 22964.25169765005	2 and 6 8281661.6103856
	2 and 7 0.002798166014987343	2 and 7 74779.2231638531	2 and 7 6595165985.794641
	3 and 4 0.06142182650457538	3 and 4 7.290130207078613e+25	3 and 4 1546403.985793031
	3 and 5 0.002798166014987343	3 and 5 17569.75229853765	3 and 5 55059318.268200174
	3 and 6 0.0	3 and 6 29634.22346391982	3 and 6 10745345.431027211
	3 and 7 0.0	3 and 7 68108.78739753748	3 and 7 6597629671.435245
	4 and 5 0.06421999251956272	4 and 5 7.290130207078613e+25	4 and 5 56605722.240138955
	4 and 6 0.06142182650457538	4 and 6 7.290130207078613e+25	4 and 6 12291749.35462853
	4 and 7 0.06142182650457538	4 and 7 7.290130207078613e+25	4 and 7 6599176075.036452
	5 and 6 0.002798166014987343	5 and 6 12064.990291189548	5 and 6 44313972.89276807
	5 and 7 0.002798166014987343	5 and 7 85678.49397724713	5 and 7 6542570356.7310295
	6 and 7 0.0	6 and 7 97743.0108614573	6 and 7 6586884326.013906
	0 and global: 0.004554221234085876	0 and global: 297976.9979743444	0 and global: 1.4285708133133204
	1 and global: 0.06462485040914114	1 and global: 1.1086612543426392e+24	1 and global: 1.5322802465250962
	2 and global: 0.000404857889578405	2 and global: 226872.7648010641	2 and global: 4010090.7213942762
	3 and global: 0.003203023904565748	3 and global: 233543.24628620775	3 and global: 1546402.7813941247
	4 and global: 0.06462485040914114	4 and global: 7.290130207078613e+25	4 and global: 1.5329050863001332
	5 and global: 0.000404857889578405	5 and global: 215973.4939876701	5 and global: 56605721.02613207
	6 and global: 0.003203023904565748	6 and global: 203909.03660293182	6 and global: 12291748.176275602
	7 and global: 0.003203023904565748	7 and global: 301651.9879649172	7 and global: 6599176073.941712



Norm	0 and 1 0.06007122684578516 0 and 2 0.004149344348075922 0 and 3 0.0013511997390750364 0 and 4 0.06007122684578516 0 and 5 0.004149344348075922 0 and 6 0.0013511997390750364 0 and 7 0.0013511997390750364 1 and 2 0.06422057119386108 1 and 3 0.06142242658486019 1 and 4 0.0 1 and 5 0.06422057119386108 1 and 6 0.06142242658486019 1 and 7 0.06142242658486019 2 and 3 0.002798144609000886 2 and 4 0.06422057119386108 2 and 5 0.0 2 and 6 0.002798144609000886 2 and 7 0.002798144609000886 3 and 4 0.06142242658486019 3 and 5 0.002798144609000886 3 and 6 0.0 3 and 7 0.0 4 and 5 0.06422057119386108 4 and 6 0.06142242658486019 4 and 7 0.06142242658486019 5 and 6 0.002798144609000886 5 and 7 0.002798144609000886 6 and 7 0.0  0 and global: 0.0045542126780806136 1 and global: 0.06462543952386578 2 and global: 0.0004048683300046911 3 and global: 0.003203012939005577 4 and global: 0.06462543952386578 5 and global: 0.0004048683300046911 6 and global: 0.003203012939005577 7 and global: 0.003203012939005577	0 and 1 0.2120918774216982 0 and 2 2.083455323327093 0 and 3 0.4186697767478784 0 and 4 0.22520613686580915 0 and 5 2.126833513588227 0 and 6 0.42755079621031844 0 and 7 0.4304186042738239 1 and 2 1.87230111569839 1 and 3 0.2075155691191755 1 and 4 0.013497105938968886 1 and 5 1.9156793059595236 1 and 6 0.21639658858161548 1 and 7 0.21926439664512104 2 and 3 1.6689748310649373 2 and 4 1.8588040097594212 2 and 5 0.043495549402412736 2 and 6 1.660146067455079 2 and 7 1.6572830707436552 3 and 4 0.1940184631802066 3 and 5 1.7124703804673502 3 and 6 0.008881019462439962 3 and 7 0.01174882752594549 4 and 5 1.9021822000205548 4 and 6 0.20289948264264662 4 and 7 0.20576729070615213 5 and 6 1.703641616857492 5 and 7 1.7007786201460682 6 and 7 0.0028678080635055293  0 and global: 7.33227062129683 1 and global: 7.120178743875132 2 and global: 5.249625763724158 3 and global: 6.918600594789096 4 and global: 7.107064484431021 5 and global: 5.206130214321746 6 and global: 6.9097718311792375 7 and global: 6.906908834467814	0 and 1 0.10673834724403883 0 and 2 1.380199654329676 0 and 3 0.9940758463410928 0 and 4 0.1066723190793967 0 and 5 1.3865831281400822 0 and 6 0.9941117930902268 0 and 7 0.9918085825007515 1 and 2 1.481643172934903 1 and 3 1.09551936494632 1 and 4 0.000216711417305436 1 and 5 1.4880266467453094 1 and 6 1.095555311695454 1 and 7 1.0932521011059786 2 and 3 0.386123807988583 2 and 4 1.4815801279492307 2 and 5 0.006383473810406449 2 and 6 0.3860878612394491 2 and 7 0.38839107182892435 3 and 4 1.0954563199606473 3 and 5 0.39250728179898947 3 and 6 0.0005367686971908814 3 and 7 0.0022672638403413476 4 and 5 1.4879636017596367 4 and 6 1.095492266709781 4 and 7 1.0931890561203057 5 and 6 0.3924713350498556 5 and 7 0.39477454563933084 6 and 7 0.002303210589475267  0 and global: 1.4272442497984321 1 and global: 1.5339825970424708 2 and global: 0.3652357969415416 3 and global: 0.4660649404007512 4 and global: 1.5339165688778287 5 and global: 0.36830371566632125 6 and global: 0.4660335161887579 7 and global: 0.46753058838751227
Lognorm	0 and 1 0.06005760556573089 0 and 2 277292932.92018044 0 and 3 0.0013481824468570065 0 and 4 0.06005760556573089 0 and 5 277292932.92018044 0 and 6 0.0013481824468570065 0 and 7 0.0013481824468570065 1 and 2 277292932.96221083 1 and 3 0.06140578801258789 1 and 4 0.0 1 and 5 277292932.96221083 1 and 6 0.06140578801258789 1 and 7 0.06140578801258789 2 and 3 277292932.9192346 2 and 4 277292932.96221083 2 and 5 0.0 2 and 6 277292932.9192346 2 and 7 277292932.9192346 3 and 4 0.06140578801258789 3 and 5 277292932.9192346	0 and 1 136052570759.68797 0 and 2 136049252022.25606 0 and 3 136049252023.49529 0 and 4 136052613834.89775 0 and 5 136049252022.23308 0 and 6 136049252023.48358 0 and 7 136049252023.47874 1 and 2 4646281.706299077 1 and 3 4646282.6346056815 1 and 4 60305.293719564266 1 and 5 4646281.68343982 1 and 6 4646282.625588187 1 and 7 4646282.62239414 2 and 3 1.6648294004410842 2 and 4 4706587.0000186395 2 and 5 0.041380356326612765 2 and 6 1.6502568358270895 2 and 7 1.6436558539373416 3 and 4 4706587.928325245 3 and 5 1.706209756767697	0 and 1 0.10693360673000937 0 and 2 18078.08070624799 0 and 3 396429932.01335263 0 and 4 0.10673795477597588 0 and 5 3654423980.56018 0 and 6 34150.128164832444 0 and 7 3063532541.261385 1 and 2 18078.178362300816 1 and 3 396429932.10379016 1 and 4 0.0006758982822177532 1 and 5 3654423980.6540914 1 and 6 34150.218602356945 1 and 7 3063532541.347425 2 and 3 396411859.9474494 2 and 4 18078.1780593311 2 and 5 3654405906.9194674 2 and 6 16074.949135666597 2 and 7 3063514469.401654 3 and 4 396429932.1033487 3 and 5 3257994048.5552373



	3 and 6 0.0 3 and 7 0.0 4 and 5 277292932.96221083 4 and 6 0.06140578801258789 4 and 7 0.06140578801258789 5 and 6 277292932.9192346 5 and 7 277292932.9192346 6 and 7 0.0  0 and global: 879.6318256815373 1 and global: 879.6738560809152 2 and global: 277292053.288431 3 and global: 879.6308797800148 4 and global: 879.6738560809152 5 and global: 277292053.288431 6 and global: 879.6308797800148 7 and global: 879.6308797800148	3 and 6 0.01476383406909202 3 and 7 0.021474327080365313 4 and 5 4706586.977159383 4 and 6 4706587.919307751 4 and 7 4706587.9161137035 5 and 6 1.6916371921537026 5 and 7 1.6850362102639547 6 and 7 0.006710493011273291  0 and global: 136049252019.28818 1 and global: 4646278.745104295 2 and global: 5.291769628975244 3 and global: 6.956599029416328 4 and global: 4706584.038823858 5 and global: 5.25038927264863 6 and global: 6.942026464802333 7 and global: 6.935425482912585	3 and 6 396395785.00112915 3 and 7 2667102609.454204 4 and 5 3654423980.653788 4 and 6 34150.21816088371 4 and 7 3063532541.3469834 5 and 6 3654389832.0148063 5 and 7 590891439.3153129 6 and 7 3063498394.4528565  0 and global: 1.4259679749954903 1 and global: 1.5329015817254994 2 and global: 18077.251829285244 3 and global: 396429931.4055713 4 and global: 1.5327059297714662 5 and global: 3654423979.8410144 6 and global: 34149.4422483637 7 and global: 3063532540.6762013
Beta	0 and 1 237.82440007983263 0 and 2 0.029280586421994704 0 and 3 9.234096878597615 0 and 4 237.82440007983263 0 and 5 0.029280586421994704 0 and 6 9.234096878597615 0 and 7 9.234096878597615 1 and 2 237.85368066625458 1 and 3 228.59343422794328 1 and 4 0.0 1 and 5 237.85368066625458 1 and 6 228.59343422794328 1 and 7 228.59343422794328 2 and 3 9.260246438311304 2 and 4 237.85368066625458 2 and 5 0.0 2 and 6 9.260246438311304 2 and 7 9.260246438311304 3 and 4 228.59343422794328 3 and 5 9.260246438311304 3 and 6 0.0 3 and 7 0.0 4 and 5 237.85368066625458 4 and 6 228.59343422794328 4 and 7 228.59343422794328 5 and 6 9.260246438311304 5 and 7 9.260246438311304 6 and 7 0.0  0 and global: 0.030364586522496288 1 and global: 237.8547646663551 2 and global: 0.0010840001005015807 3 and global: 9.261330438411806 4 and global: 237.8547646663551 5 and global: 0.0010840001005015807 6 and global: 9.261330438411806 7 and global: 9.261330438411806	0 and 1 17165610009027.395 0 and 2 32112801924152.258 0 and 3 24630492716460.13 0 and 4 5.470130100308359e+24 0 and 5 40861287911002.43 0 and 6 22857730657881.29 0 and 7 22201528512974.766 1 and 2 29660613406464.625 1 and 3 17273830368350.904 1 and 4 5.470130100291193e+24 1 and 5 33504625562892.355 1 and 6 15501068309772.764 1 and 7 14844866164866.338 2 and 3 17334525653271.008 2 and 4 5.470130100276247e+24 2 and 5 8748485986850.175 2 and 6 18398182888418.105 2 and 7 18791904175361.99 3 and 4 5.470130100283729e+24 3 and 5 16230795194542.807 3 and 6 1772762058578.8757 3 and 7 2428964203485.3984 4 and 5 5.470130100267498e+24 4 and 6 5.470130100285502e+24 4 and 7 5.470130100286158e+24 5 and 6 18003557253121.312 5 and 7 18659759398027.78 6 and 7 656202144906.5271  0 and global: 977185598628.7579 1 and global: 16188424410403.002 2 and global: 31135616325525.04 3 and global: 23653307117834.3 4 and global: 5.470130100307382e+24 5 and global: 39884102312375.09 6 and global: 21880545059255.465 7 and global: 21224342914348.938	0 and 1 2266722.893849632 0 and 2 803025.1788703941 0 and 3 23964014297.84022 0 and 4 2256090.9439239977 0 and 5 808564.3717428442 0 and 6 400558421948.7791 0 and 7 779389.9601179375 1 and 2 3069748.0727200266 1 and 3 23961747575.205105 1 and 4 10631.953459427701 1 and 5 3075287.2655924764 1 and 6 400556155226.144 1 and 7 3046112.85396757 2 and 3 23964817321.26088 2 and 4 3059116.1227943925 2 and 5 5539.23855129339 2 and 6 400559224972.41876 2 and 7 23635.218752456767 3 and 4 23961758207.15856 3 and 5 23964822860.499428 3 and 6 376594407655.1014 3 and 7 23964793686.388474 4 and 5 3064655.3156668423 4 and 6 400556165858.0975 4 and 7 3035480.9040419357 5 and 6 400559230511.6446 5 and 7 29174.411624906734 6 and 7 400559201337.40656  0 and global: 310078.91876134736 1 and global: 1956648.6119356353 2 and global: 1113102.3394170266 3 and global: 23963704219.349495 4 and global: 1946016.6620100013 5 and global: 1118641.5779683199 6 and global: 400558111871.5425 7 and global: 1089467.4670115337

Burr	0 and 1 nan	0 and 1 1.3510894916043246e+18	0 and 1 nan
	0 and 2 nan	0 and 2 616291619683036.2	0 and 2 nan
	0 and 3 nan	0 and 3 616291619683039.5	0 and 3 nan
	0 and 4 nan	0 and 4 1.3510894916043246e+18	0 and 4 nan
	0 and 5 nan	0 and 5 616291619683035.8	0 and 5 nan
	0 and 6 nan	0 and 6 616291619683039.4	0 and 6 nan
	0 and 7 nan	0 and 7 616291619683039.4	0 and 7 nan
	1 and 2 nan	1 and 2 1.3517057832240077e+18	1 and 2 nan
	1 and 3 nan	1 and 3 1.3517057832240077e+18	1 and 3 nan
	1 and 4 nan	1 and 4 0.0004754295375376583	1 and 4 nan
	1 and 5 nan	1 and 5 1.3517057832240077e+18	1 and 5 nan
	1 and 6 nan	1 and 6 1.3517057832240077e+18	1 and 6 nan
	1 and 7 nan	1 and 7 1.3517057832240077e+18	1 and 7 nan
	2 and 3 0.003143242360355302	2 and 3 5.8835228547409715	2 and 3 8339111.850938806
	2 and 4 nan	2 and 4 1.3517057832240077e+18	2 and 4 nan
	2 and 5 0.0	2 and 5 1.2159821403087072	2 and 5 550.40966283993
	2 and 6 0.003143242360355302	2 and 6 5.803818213439163	2 and 6 13181097.303081887
	2 and 7 0.003143242360355302	2 and 7 5.737656934686064	2 and 7 55861031.07412115
	3 and 4 nan	3 and 4 1.3517057832240077e+18	3 and 4 nan
	3 and 5 0.003143242360355302	3 and 5 7.099153847589226	3 and 5 8338561.644158137
	3 and 6 0.0	3 and 6 0.09567118691830748	3 and 6 4841986.09609811
	3 and 7 0.0	3 and 7 0.14594398897780564	3 and 7 47521922.0175105
	4 and 5 nan	4 and 5 1.3517057832240077e+18	4 and 5 nan
	4 and 6 nan	4 and 6 1.3517057832240077e+18	4 and 6 nan
	4 and 7 nan	4 and 7 1.3517057832240077e+18	4 and 7 nan
	5 and 6 0.003143242360355302	5 and 6 7.019449206287417	5 and 6 13180546.893419046
	5 and 7 0.003143242360355302	5 and 7 6.953287927534317	5 and 7 55860480.66445831
	6 and 7 0.0	6 and 7 0.06618744306223928	6 and 7 42679937.47035159
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