

## newbler Matches

HP base \ HP length	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
A	10112299	3780060	1394445	591882	250066	94484	27007	4569	498	61	10	9	10	4	3	7	1	2	0	1	0	0	0	1
C	9275676	1932907	270496	54226	8510	1239	175	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
G	9325002	1918715	273077	51062	7796	1026	115	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
T	10114600	3747686	1369516	584450	260939	101704	33958	6960	802	88	37	18	21	11	4	2	4	1	0	2	0	0	0	NA

Total HP matches: 55596277

Total match positions: 80998946

## newbler Substitutions

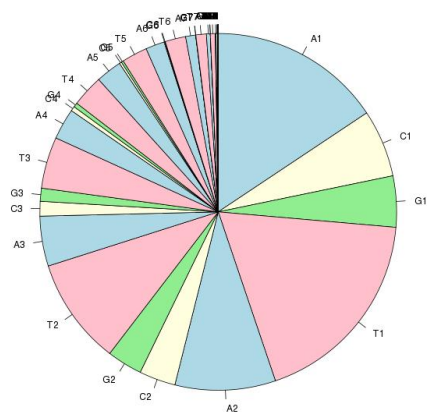
	A	C	G	T
A	0 ( 0 %)	74588 ( 11.2 %)	63823 ( 9.58 %)	92787 ( 13.93 %)
C	26505 ( 3.98 %)	0 ( 0 %)	49970 ( 7.5 %)	41064 ( 6.17 %)
G	23442 ( 3.52 %)	48670 ( 7.31 %)	0 ( 0 %)	51326 ( 7.71 %)
T	53587 ( 8.05 %)	72148 ( 10.83 %)	68059 ( 10.22 %)	0 ( 0 %)

Total substitutions: 665969

## newbler Insertion

### Insertion per context

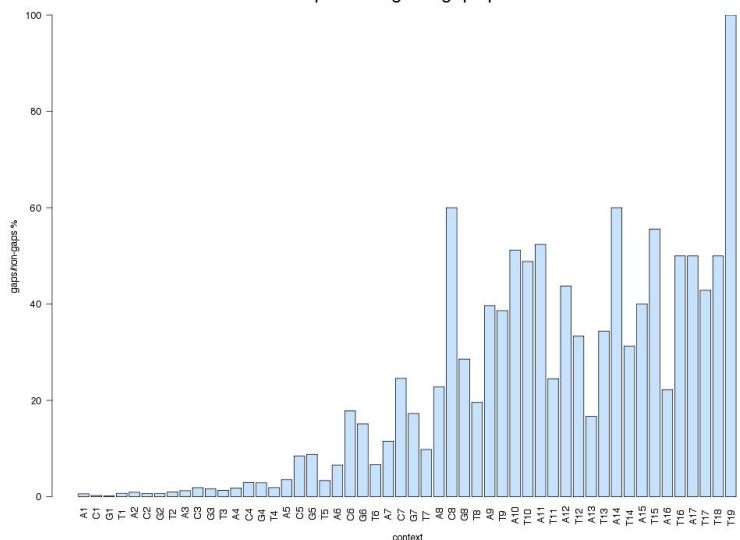
Insertion: number of gaps per context



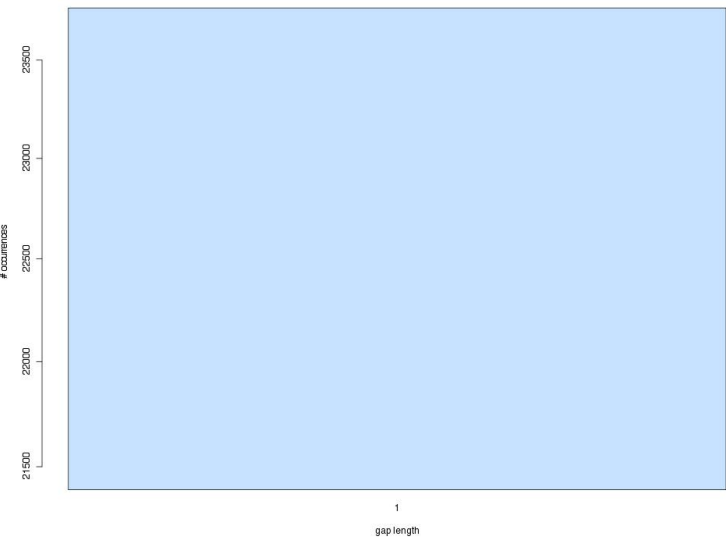
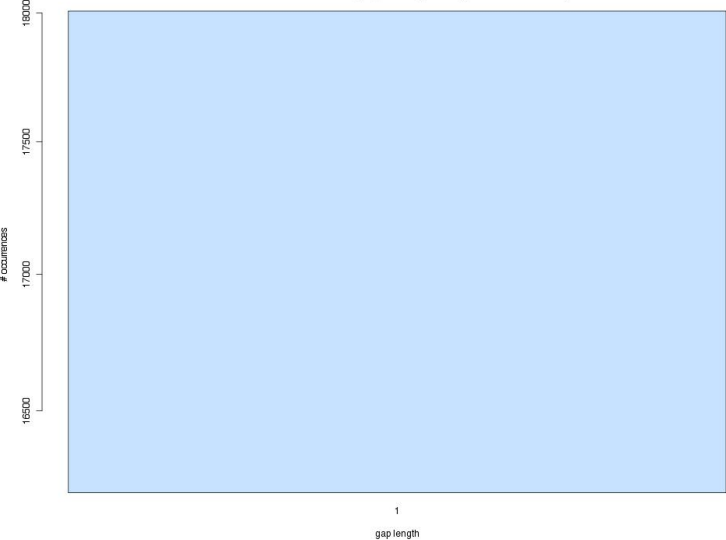
Total: 389063

### Insertion per context

Insertion: percentage of gaps per context



Context	#Data	Gap lengths	Zipfian fit	Geom fit
*	389077	<p>Insertion error gap lengths (context=any)</p>	<p>s = 6.51939809057985  <math>X^2 = 877.746274929354</math>                      p-value = <math>3.44585223136766e-180</math></p>	<p>beta = 0.0129859257831130  <math>X^2 = 35004614722711199744</math>                      p-value = 0</p>
A1	60867	<p>Insertion error gap lengths (context=A1)</p>	INVALID/ERROR	INVALID/ERROR

C1	23769	<p style="text-align: center;">Insertion error gap lengths (context=C1)</p> 	INVALID/ERROR	INVALID/ERROR
G1	18008	<p style="text-align: center;">Insertion error gap lengths (context=G1)</p> 	INVALID/ERROR	INVALID/ERROR
T1	71668		INVALID/ERROR	INVALID/ERROR

		<p>Insertion error gap lengths (context=T1)</p>		
A2	35441	<p>Insertion error gap lengths (context=A2)</p>	INVALID/ERROR	INVALID/ERROR
C2	12813	<p>Insertion error gap lengths (context=C2)</p>	INVALID/ERROR	INVALID/ERROR

G2	12475		INVALID/ERROR	INVALID/ERROR
T2	37677		INVALID/ERROR	INVALID/ERROR
A3	17610		<p> <math>s = 5.22755075701805</math>  <math>X^2 = 6.71063117080714</math>  <math>p\text{-value} = 0.00958397966889613</math> </p>	<p> <math>\beta = 0.0307666905168144</math>  <math>X^2 = 32.9376131431273</math>  <math>p\text{-value} = 9.51641517145777e-09</math> </p>
			<p> <math>s = 5.73916711004925</math> </p>	<p> <math>\beta =</math> </p>

C3	5170	<p>Insertion error gap lengths (context=C3)</p>	$X^2 = 1.42617425706320$ $p\text{-value} = 0.232389817888495$	$X^2 = 0.0212040893600908$ $X^2 = 6.59723724054471$ $p\text{-value} = 0.010213713117269$
G3	4599	<p>Insertion error gap lengths (context=G3)</p>	$s = 5.56000151973139$ $X^2 = 1.13500115649519$ $p\text{-value} = 0.286711091735564$	$\beta = 0.0241884150222789$ $X^2 = 7.96514300733158$ $p\text{-value} = 0.00476867233788653$
T3	18172	<p>Insertion error gap lengths (context=T3)</p>	$s = 5.09136183694833$ $X^2 = 1.81083030039386$ $p\text{-value} = 0.178408659637875$	$\beta = 0.0341748604836566$ $X^2 = 69.4456619068442$ $p\text{-value} = 7.85489685251306e-17$
			$s = 5.88959000897921$	$\beta =$

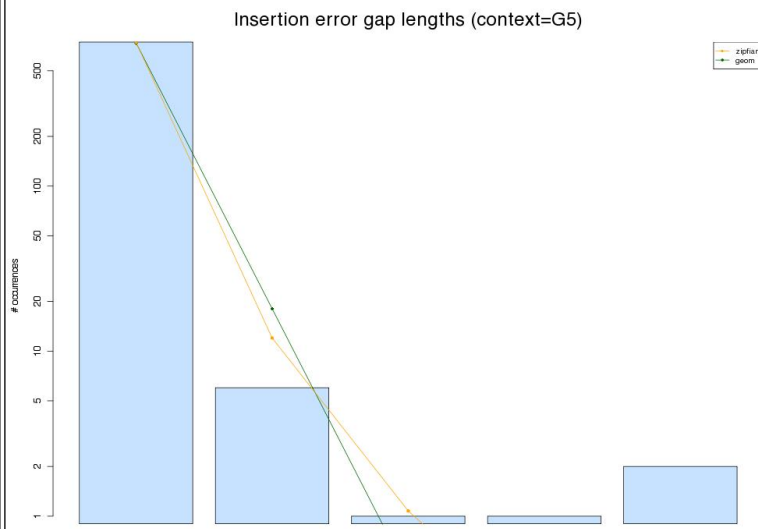
<p>A4</p> <p>10924</p>	<p>Insertion error gap lengths (context=A4)</p>	<p><math>X^2 =</math> 20.7852362987129 p-value = 3.06579622558528e-05</p>	<p>0.0207082025997312 <math>X^2 =</math> 357.810633349254 p-value = 2.00635687781578e-78</p>
<p>C4</p> <p>1640</p>	<p>Insertion error gap lengths (context=C4)</p>	<p>s = 6.01774467987375 <math>X^2 =</math> 14.9261417331973 p-value = 0.000573891119684327</p>	<p>beta = 0.0197250448296472 <math>X^2 =</math> 151.852576988938 p-value = 1.06079600491267e-33</p>
<p>G4</p> <p>1516</p>	<p>Insertion error gap lengths (context=G4)</p>	<p>s = 6.56451405542655 <math>X^2 =</math> 39.9076253890933 p-value = 2.15858549207793e-09</p>	<p>beta = 0.0143042912873863 <math>X^2 =</math> 993.75859091435 p-value = 1.61459577227286e-216</p>

<p>T4</p>	<p>11235</p>	<p>Insertion error gap lengths (context=T4)</p>	<p>s = 5.79768276817102  <math>X^2 = 2.59162363336367</math>                  p-value = 0.273675599707333</p>	<p>beta = 0.021767522855899  <math>X^2 = 289.954090198064</math>                  p-value = 1.08960556043866e-63</p>
<p>A5</p>	<p>9158</p>	<p>Insertion error gap lengths (context=A5)</p>	<p>s = 6.9784881132812  <math>X^2 = 20.5088244963975</math>                  p-value = 0.00013313238128007</p>	<p>beta = 0.00951762924507904  <math>X^2 = 14052.3291806063</math>                  p-value = 0</p>
<p>C5</p>	<p>791</p>	<p>Insertion error gap lengths (context=C5)</p>	<p>s = 6.27515053954908  <math>X^2 = 28.5957541216234</math>                  p-value = 6.17320770478853e-07</p>	<p>beta = 0.0173913043478261  <math>X^2 = 981.080091092807</math>                  p-value = 9.14460743624929e-214</p>



G5

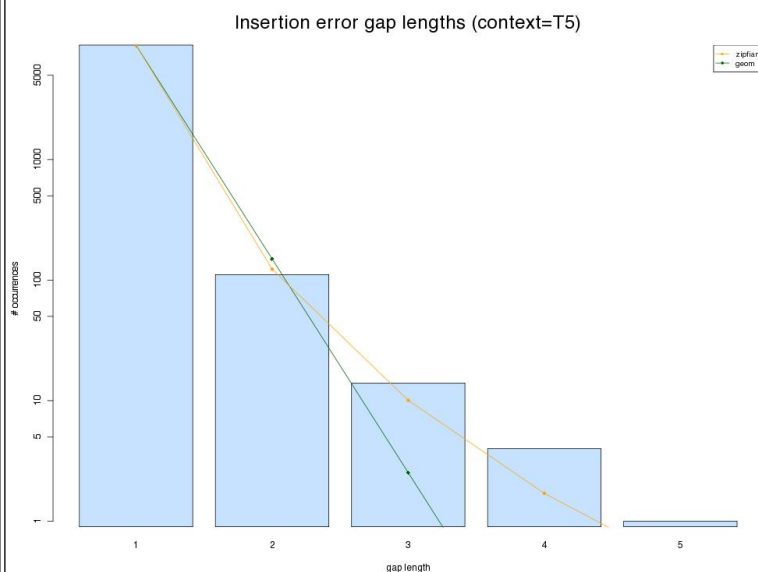
756



s = 5.94987448525929  
 $X^2 = 80.0561098563668$   
 p-value = 2.98538696130464e-17  
 beta = 0.0245161290322581  
 $X^2 = 15109.3918488239$   
 p-value = 0

T5

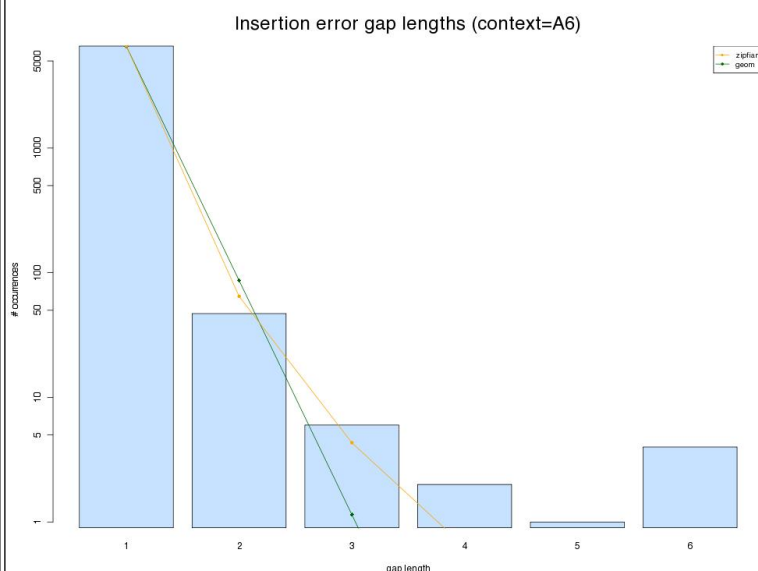
9036



s = 6.17545065788592  
 $X^2 = 6.58838551430183$   
 p-value = 0.0862412169381628  
 beta = 0.0168643237950168  
 $X^2 = 1819.43580975663$   
 p-value = 0

A6

6643

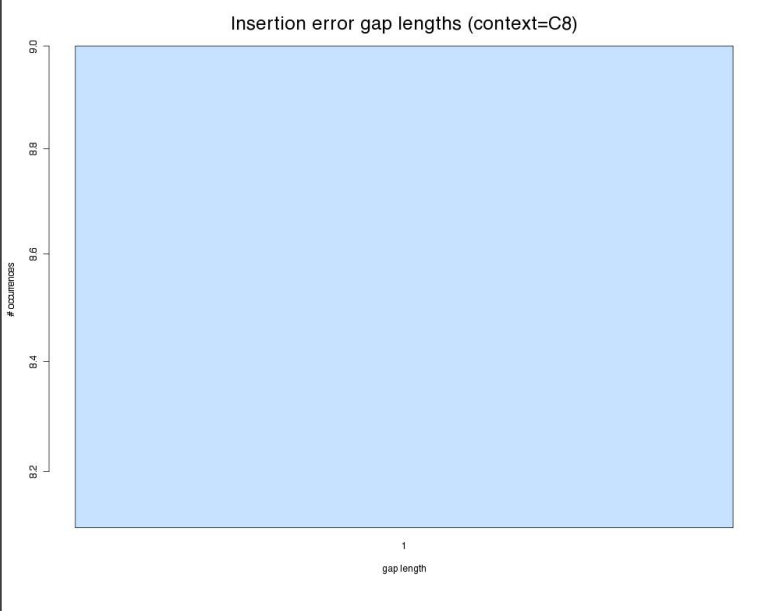
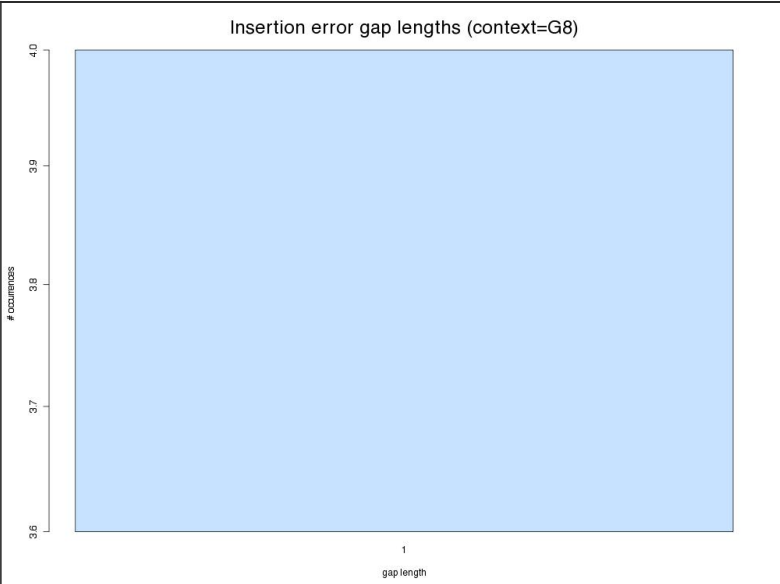
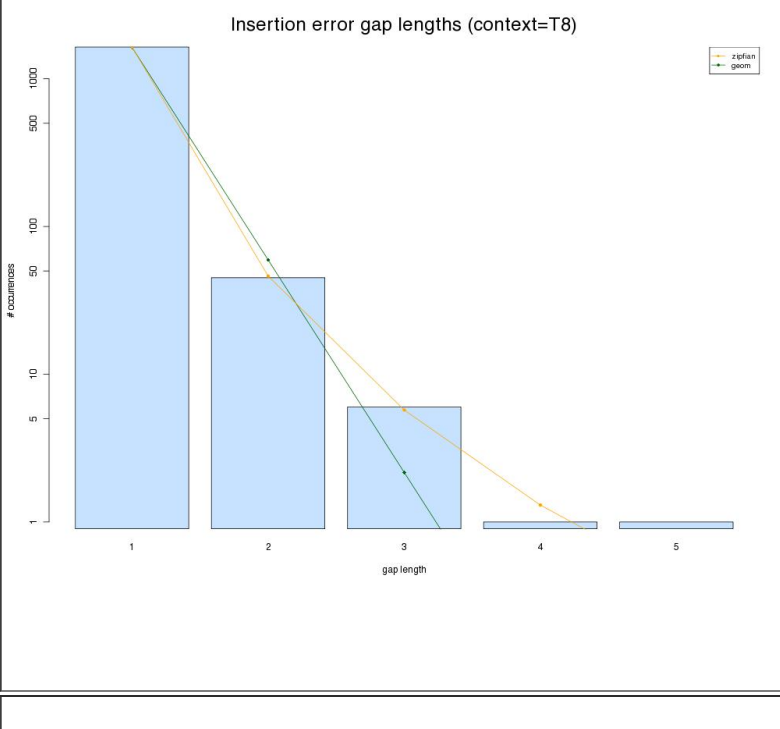


s = 6.66882616104751  
 $X^2 = 381.995539142324$   
 p-value = 2.1578378316663e-81  
 beta = 0.0132204396910279  
 $X^2 = 6049027.1349865$   
 p-value = 0

C6	274	<p style="text-align: center;">Insertion error gap lengths (context=C6)</p> <table border="1"> <caption>Data for C6 Histogram</caption> <thead> <tr> <th>gap length</th> <th># occurrences</th> </tr> </thead> <tbody> <tr><td>1</td><td>200</td></tr> <tr><td>2</td><td>40</td></tr> <tr><td>3</td><td>10</td></tr> <tr><td>4</td><td>1</td></tr> <tr><td>5</td><td>2</td></tr> </tbody> </table>	gap length	# occurrences	1	200	2	40	3	10	4	1	5	2	<p> <math>s = 4.82912365086547</math>  <math>X^2 = 36.695990788652</math>  <math>p\text{-value} = 5.33582301700687e-08</math> </p>	<p> <math>\beta = 0.0584192439862544</math>  <math>X^2 = 1353.04721601992</math>  <math>p\text{-value} = 4.54409415520433e-293</math> </p>
gap length	# occurrences															
1	200															
2	40															
3	10															
4	1															
5	2															
G6	187	<p style="text-align: center;">Insertion error gap lengths (context=G6)</p> <table border="1"> <caption>Data for G6 Histogram</caption> <thead> <tr> <th>gap length</th> <th># occurrences</th> </tr> </thead> <tbody> <tr><td>1</td><td>100</td></tr> <tr><td>2</td><td>40</td></tr> <tr><td>3</td><td>10</td></tr> <tr><td>4</td><td>2</td></tr> </tbody> </table>	gap length	# occurrences	1	100	2	40	3	10	4	2	<p> <math>s = 4.62312722172168</math>  <math>X^2 = 11.3877263848567</math>  <math>p\text{-value} = 0.00336656213791751</math> </p>	<p> <math>\beta = 0.0603015075376885</math>  <math>X^2 = 104.26439379144</math>  <math>p\text{-value} = 2.28704420379750e-23</math> </p>		
gap length	# occurrences															
1	100															
2	40															
3	10															
4	2															

T6	7257	<p>Insertion error gap lengths (context=T6)</p>	<p>s = 6.52903164872844  <math>X^2 = 1689.17955814413</math>                  p-value = 0</p>	<p>beta = 0.0164001084304689  <math>X^2 = 11810863.9827508</math>                  p-value = 0</p>
A7	3524	<p>Insertion error gap lengths (context=A7)</p>	<p>s = 5.82207914182774  <math>X^2 = 356.63757252199</math>                  p-value = 6.46786427391924e-76</p>	<p>beta = 0.0257119159524468  <math>X^2 = 935738.018539229</math>                  p-value = 0</p>
C7	57	<p>Insertion error gap lengths (context=C7)</p>	<p>INVALID/ERROR</p>	<p>INVALID/ERROR</p>

G7	24		INVALID/ERROR	INVALID/ERROR
T7	3699		<p>s = 5.62040209644576  <math>X^2 = 279.256223800628</math>                      p-value = 2.87582012106314e-58</p>	<p>beta = 0.0309143306261462  <math>X^2 = 5124130.17618897</math>                      p-value = 0</p>
A8	1357		<p>s = 5.17264169630761  <math>X^2 = 219.903733264580</math>                      p-value = 1.09090153957858e-44</p>	<p>beta = 0.047719298245614  <math>X^2 = 5759044.51146547</math>                      p-value = 0</p>

C8	9	 <p>Insertion error gap lengths (context=C8)</p>	INVALID/ERROR	INVALID/ERROR
G8	4	 <p>Insertion error gap lengths (context=G8)</p>	INVALID/ERROR	INVALID/ERROR
T8	1693	 <p>Insertion error gap lengths (context=T8)</p>	<p>s = 5.14929370914316  <math>X^2 = 0.950640382989156</math>                      p-value = 0.813193053063198</p>	<p>beta = 0.0364257256687536  <math>X^2 = 367.305036556666</math>                      p-value = 2.66904451545112e-79</p>

<p>A9</p>	<p>335</p>	<p>Insertion error gap lengths (context=A9)</p>	<p>s = 3.60428937456304  <math>X^2 = 54.4275692085391</math>                  p-value = 6.04841321290567e-10</p>	<p>beta = 0.1625  <math>X^2 = 10963.0473943865</math>                  p-value = 0</p>
<p>T9</p>	<p>505</p>	<p>Insertion error gap lengths (context=T9)</p>	<p>s = 4.71174780885746  <math>X^2 = 0.336821858718806</math>                  p-value = 0.845006525339594</p>	<p>beta = 0.0489642184557439  <math>X^2 = 17.3013082915693</math>                  p-value = 0.000175012327128963</p>
<p>A10</p>	<p>74</p>	<p>Insertion error gap lengths (context=A10)</p>	<p>s = 1.98544444700454  <math>X^2 = 20.4711674831067</math>                  p-value = 0.00869312636262025</p>	<p>beta = 0.528662420382166  <math>X^2 = 111.264248688278</math>                  p-value = 2.09277970097283e-20</p>


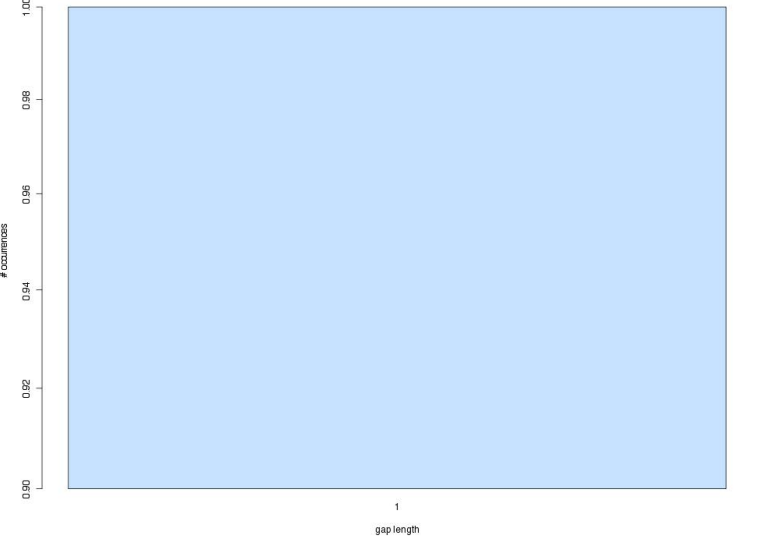
T10	84	<p>Insertion error gap lengths (context=T10)</p> <table border="1"> <thead> <tr> <th>gap length</th> <th># occurrences</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>65</td> </tr> <tr> <td>2</td> <td>10</td> </tr> </tbody> </table>	gap length	# occurrences	1	65	2	10	INVALID/ERROR	INVALID/ERROR
gap length	# occurrences									
1	65									
2	10									
A11	11	<p>Insertion error gap lengths (context=A11)</p> <table border="1"> <thead> <tr> <th>gap length</th> <th># occurrences</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>10</td> </tr> <tr> <td>2</td> <td>1</td> </tr> </tbody> </table>	gap length	# occurrences	1	10	2	1	INVALID/ERROR	INVALID/ERROR
gap length	# occurrences									
1	10									
2	1									
T11	12	<p>Insertion error gap lengths (context=T11)</p> <table border="1"> <thead> <tr> <th>gap length</th> <th># occurrences</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>10</td> </tr> <tr> <td>2</td> <td>2</td> </tr> </tbody> </table>	gap length	# occurrences	1	10	2	2	INVALID/ERROR	INVALID/ERROR
gap length	# occurrences									
1	10									
2	2									

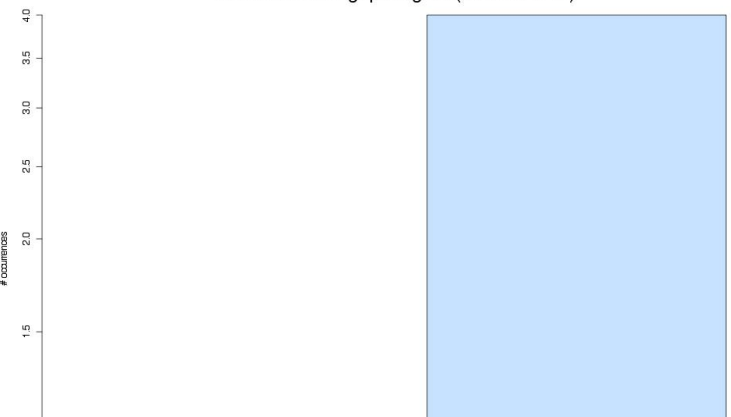
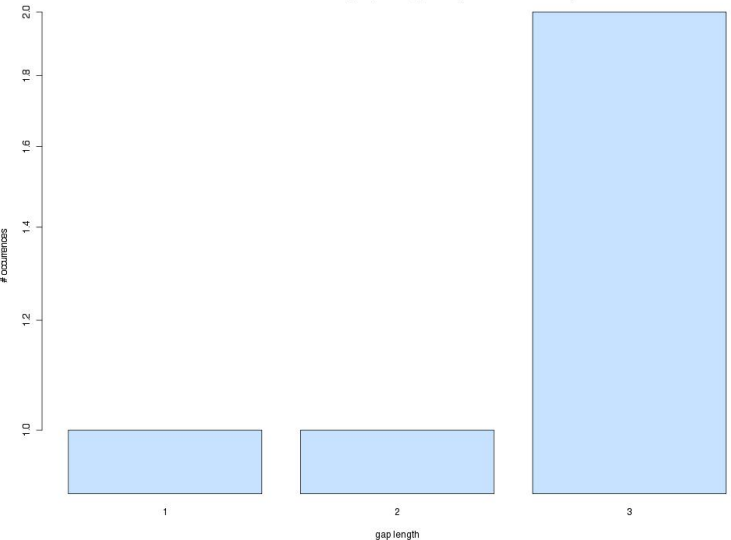
<p>A12</p> <p>19</p>		<p>s = 0.48582025011493  <math>X^2 = 6.39752241617023</math>                  p-value = 0.780833096790237</p>	<p>beta = 0.825688073394495  <math>X^2 = 20.3430308947208</math>                  p-value = 0.0261701386048254</p>
<p>T12</p> <p>9</p>		<p>INVALID/ERROR</p>	<p>INVALID/ERROR</p>
<p>A13</p> <p>6</p>		<p>INVALID/ERROR</p>	<p>INVALID/ERROR</p>
		<p>s = 0.726652312800867</p>	<p>beta =</p>

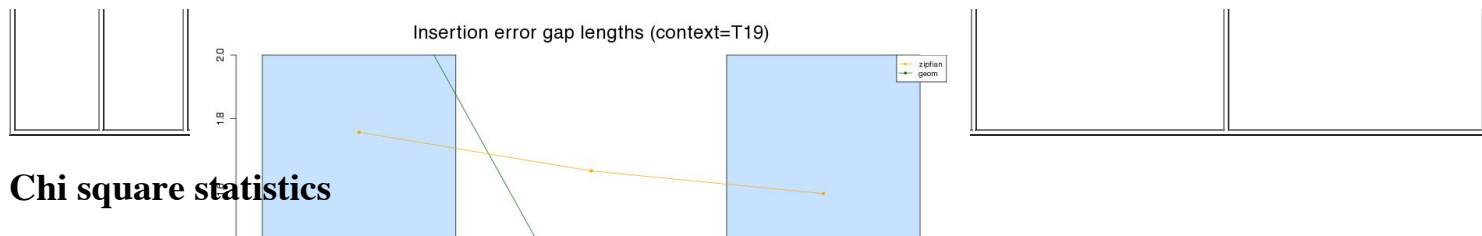


T13	17	<p>Insertion error gap lengths (context=T13)</p>	$X^2 = 2.77169644219901$ $p\text{-value} = 0.596728220237383$	$X^2 = 0.645833333333333$ $X^2 = 8.98360110407515$ $p\text{-value} = 0.0615106849103599$
A14	6	<p>Insertion error gap lengths (context=A14)</p>	$s = 1.48067490131275$ $X^2 = 0.187932256182633$ $p\text{-value} = 0.664643183539403$	$\beta = 0.333333333333333$ $X^2 = 0.777777777777777$ $p\text{-value} = 0.377821637100064$
T14	19	<p>Insertion error gap lengths (context=T14)</p>	$s = 0.158340782125942$ $X^2 = 3.62440875567043$ $p\text{-value} = 0.98930084112182$	$\beta = 0.860294117647059$ $X^2 = 13.3133502327496$ $p\text{-value} = 0.346682418843568$

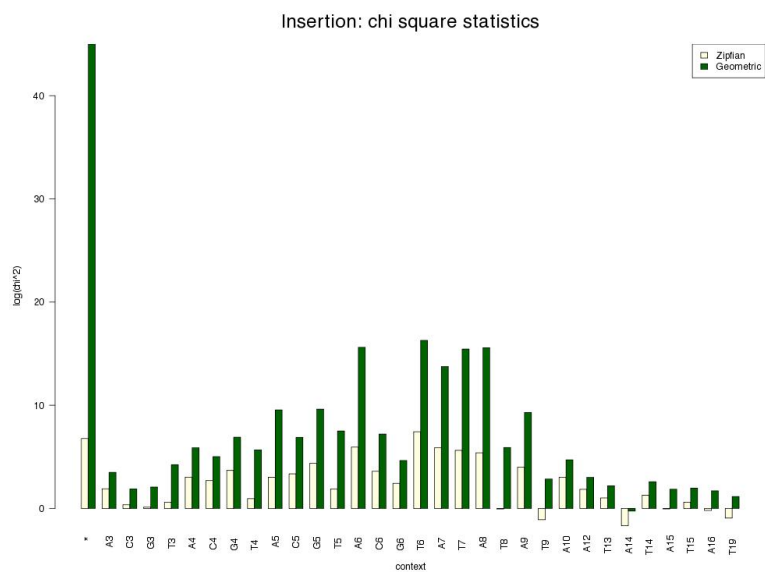
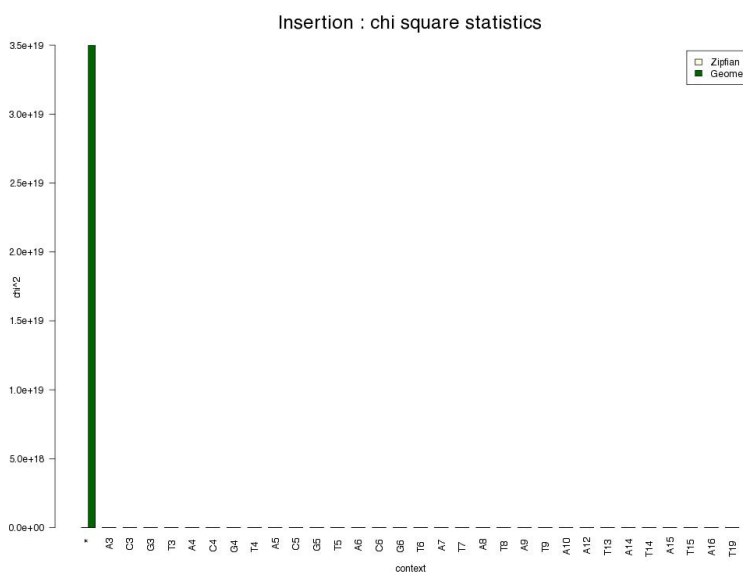
<p>A15</p>	<p>8</p>	<p>Insertion error gap lengths (context=A15)</p>	<p>s = 0.133607967762624  <math>X^2 = 0.956544519940105</math>                  p-value = 0.916312105293699</p>	<p>beta = 0.714285714285714  <math>X^2 = 6.45063753096074</math>                  p-value = 0.167927311967506</p>
<p>T15</p>	<p>13</p>	<p>Insertion error gap lengths (context=T15)</p>	<p>s = 0.503487237546934  <math>X^2 = 1.83378665329945</math>                  p-value = 0.93433281140829</p>	<p>beta = 0.74  <math>X^2 = 7.22325554211319</math>                  p-value = 0.30069337583502</p>
<p>A16</p>	<p>7</p>	<p>Insertion error gap lengths (context=A16)</p>	<p>s = 0.132318446655207  <math>X^2 = 0.827590945557859</math>                  p-value = 0.842856893927945</p>	<p>beta = 0.666666666666667  <math>X^2 = 5.52461787184009</math>                  p-value = 0.137173588026781</p>

T16	2	<p style="text-align: center;">Insertion error gap lengths (context=T16)</p> 	INVALID/ERROR	INVALID/ERROR
A17	1	<p style="text-align: center;">Insertion error gap lengths (context=A17)</p> 	INVALID/ERROR	INVALID/ERROR

T17	5	<p>Insertion error gap lengths (context=T17)</p>  <table border="1"> <caption>Insertion error gap lengths (context=T17)</caption> <thead> <tr> <th>gap length</th> <th># occurrences</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>4.0</td> </tr> </tbody> </table>	gap length	# occurrences	3	4.0	INVALID/ERROR	INVALID/ERROR				
gap length	# occurrences											
3	4.0											
T18	4	<p>Insertion error gap lengths (context=T18)</p>  <table border="1"> <caption>Insertion error gap lengths (context=T18)</caption> <thead> <tr> <th>gap length</th> <th># occurrences</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1.0</td> </tr> <tr> <td>2</td> <td>1.0</td> </tr> <tr> <td>3</td> <td>2.0</td> </tr> </tbody> </table>	gap length	# occurrences	1	1.0	2	1.0	3	2.0	INVALID/ERROR	INVALID/ERROR
gap length	# occurrences											
1	1.0											
2	1.0											
3	2.0											
T19	5		<p>s = 0.0926542887493549 X^2 = 0.395050902693468 p-value = 0.52965630969129</p>	<p>beta = 0.5 X^2 = 3.175 p-value = 0.0747732118999497</p>								

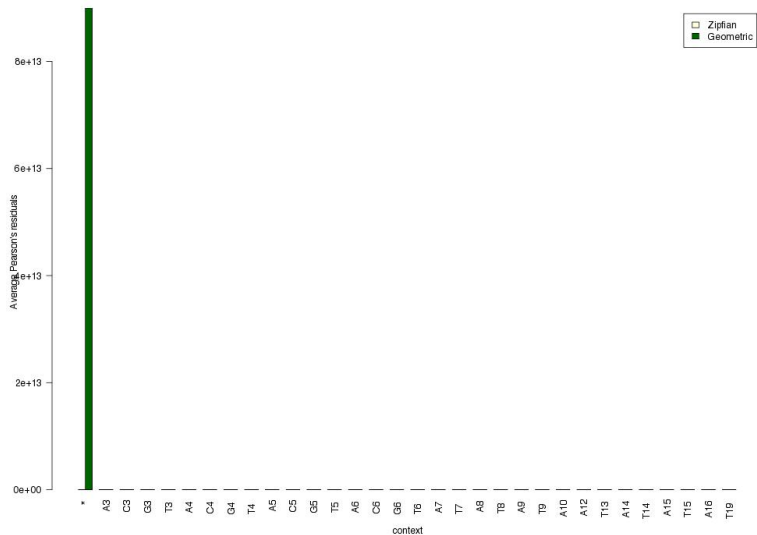


### Chi square statistics

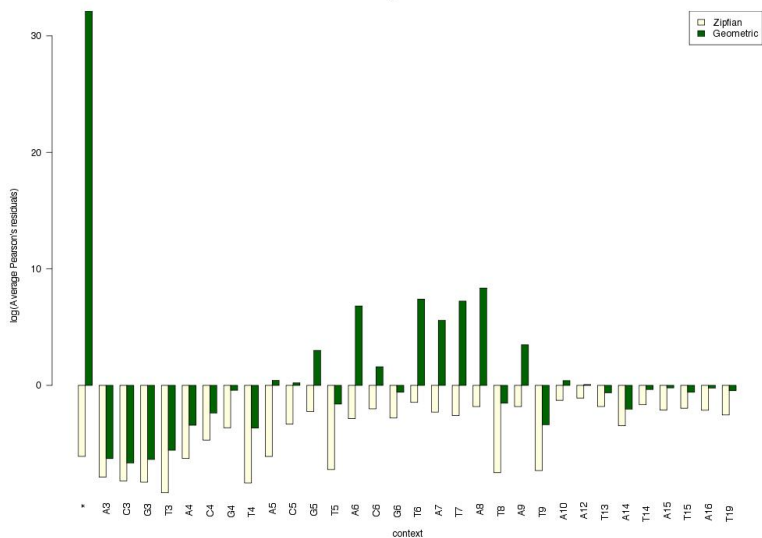


### Average Pearson's residuals

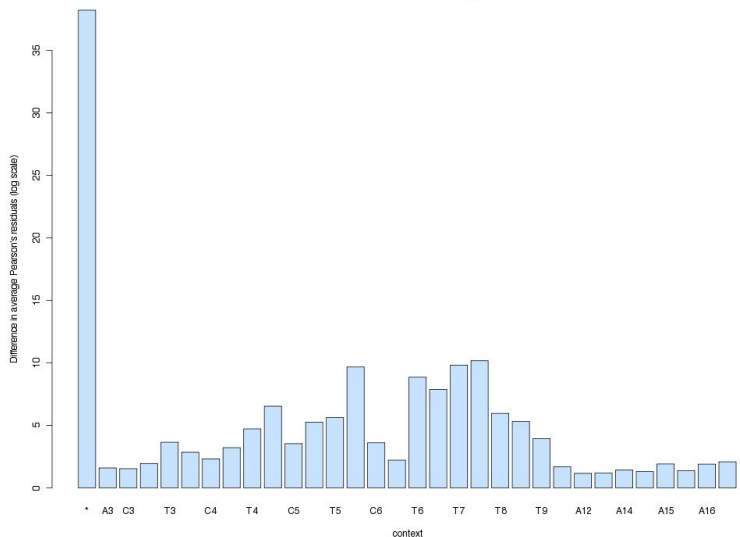
Insertion: Average Pearson residuals



Insertion : Average Pearson residuals

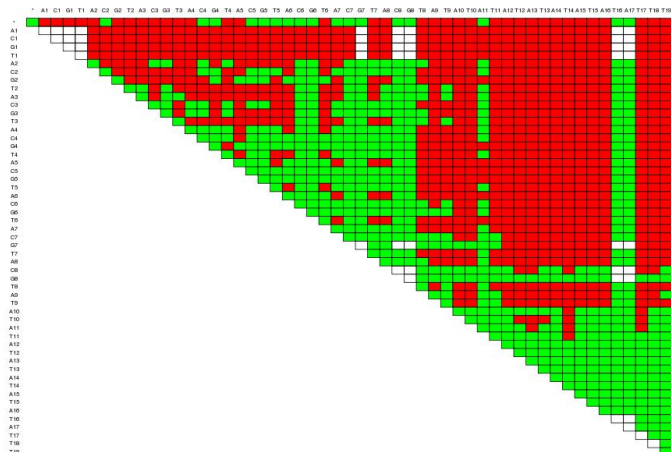


Insertion: Difference between average Pearson residuals



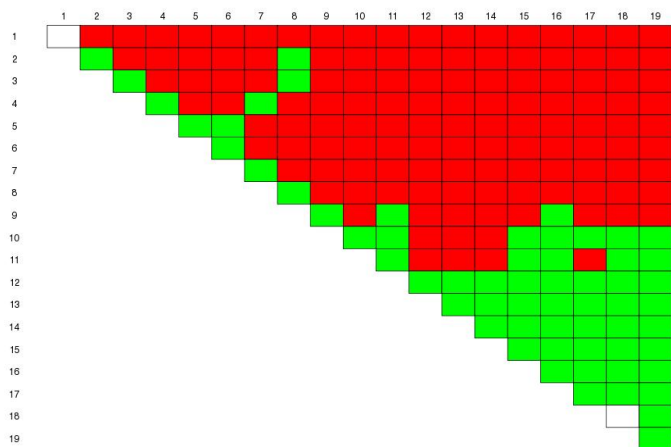
## Mann U Tests

Insertion : Mann-Whitney tests by context



## Mann U Tests by context length

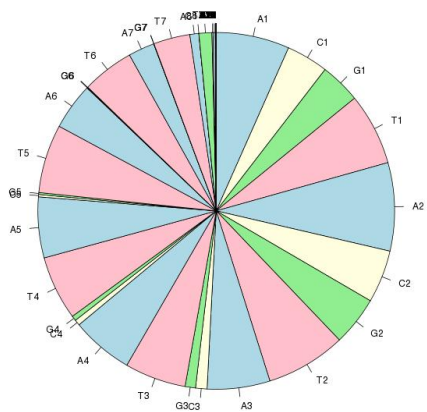
Insertion : Mann-Whitney tests by context length



## newbler Deletion

### Deletion per context

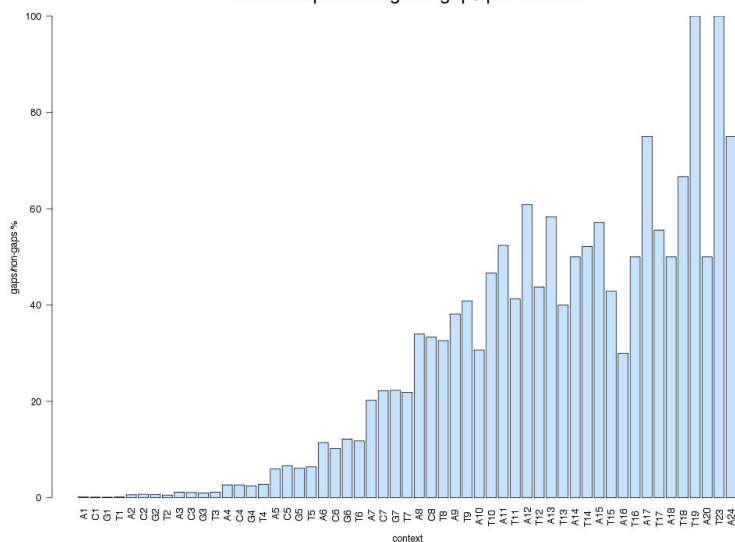
Deletion: number of gaps per context



Total: 287991

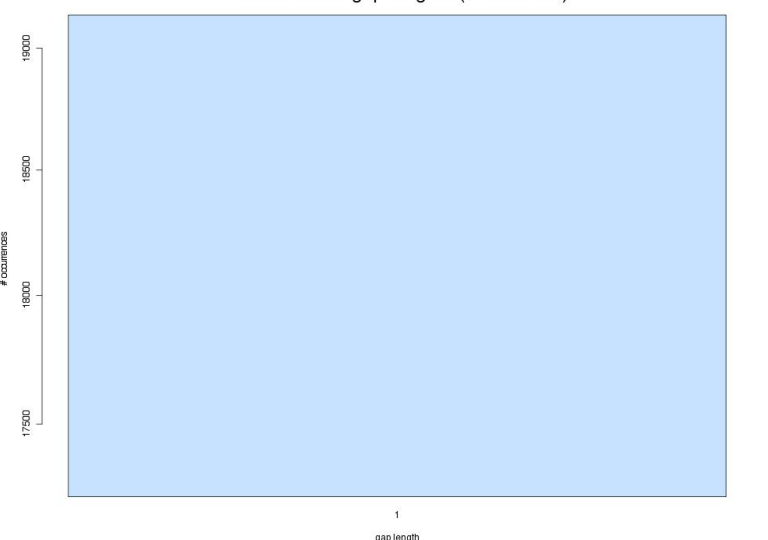
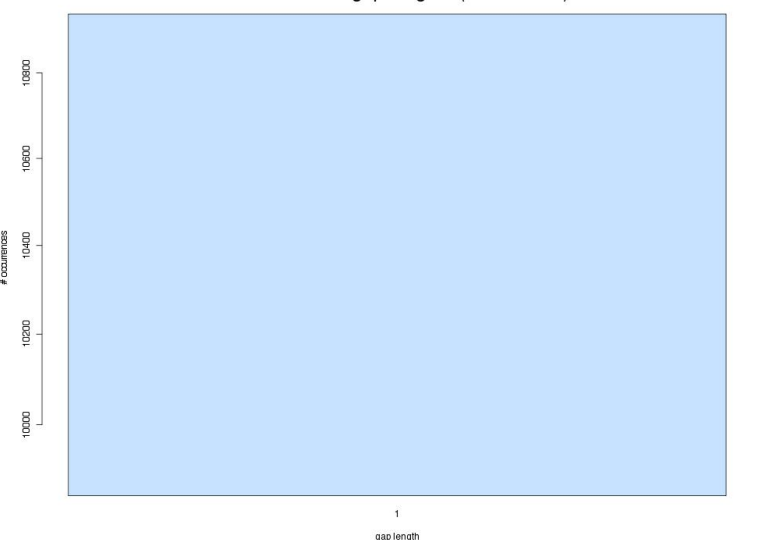

Deletion per context

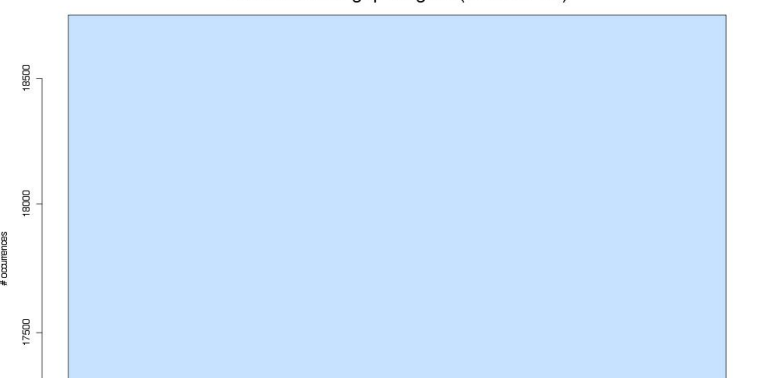
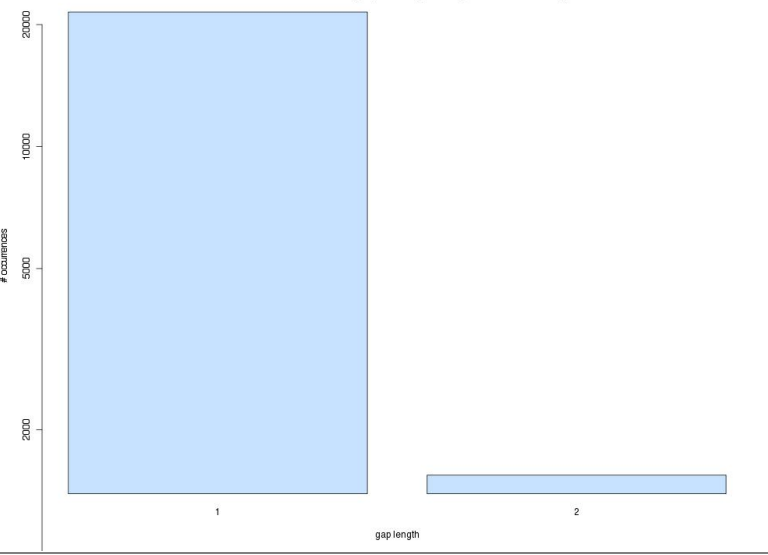
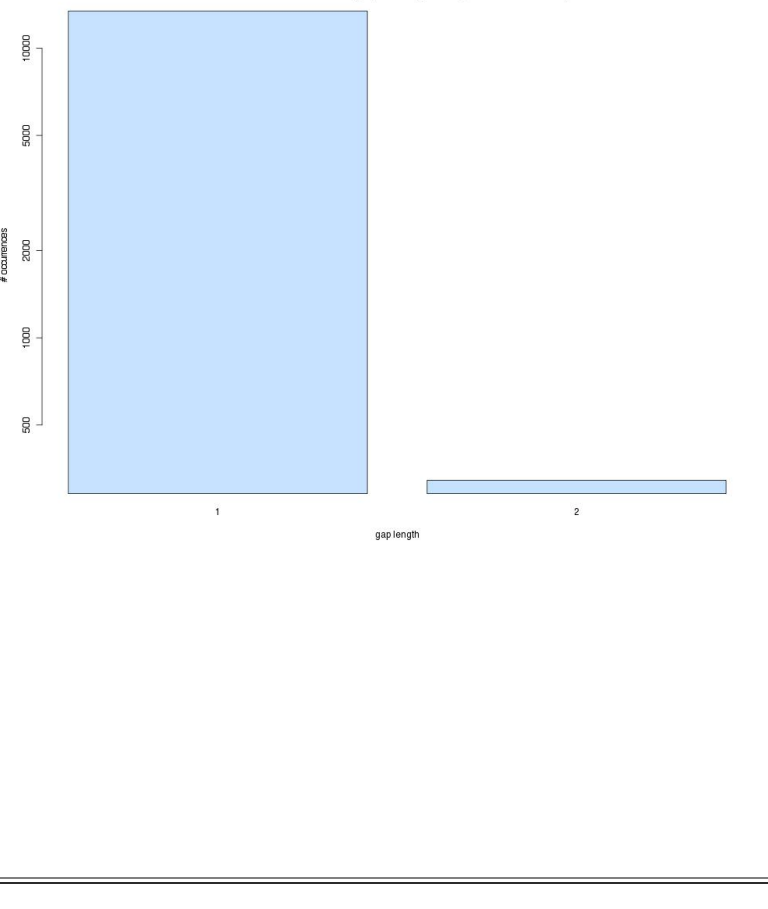
Deletion: percentage of gaps per context



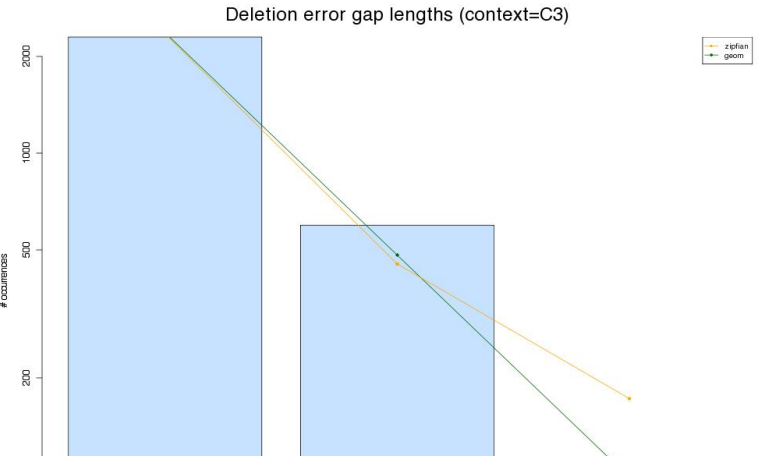
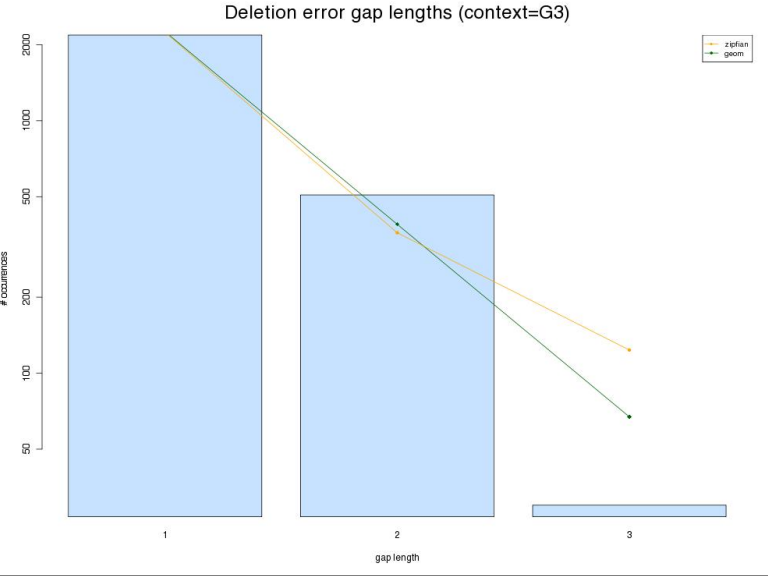
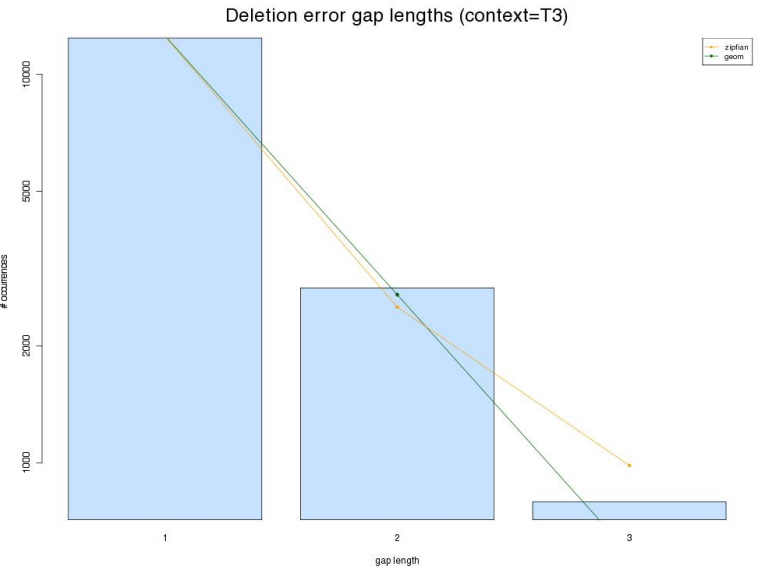
Context	#Data	Gap lengths	Zipfian fit	Geom fit
*	287991	<p>Deletion error gap lengths (context=any)</p>	<p>s = 3.7303818124779  <math>X^2 = 1525.89089781184</math>                      p-value = <math>4.94065645841247e-323</math></p>	<p>beta = <math>0.121906376439524</math>  <math>X^2 = 65921.9611596078</math>                      p-value = 0</p>



<p>A1</p>	<p>19138</p>	<p>Deletion error gap lengths (context=A1)</p> 	<p>INVALID/ERROR</p>	<p>INVALID/ERROR</p>
<p>C1</p>	<p>10940</p>	<p>Deletion error gap lengths (context=C1)</p> 	<p>INVALID/ERROR</p>	<p>INVALID/ERROR</p>
<p>G1</p>	<p>10591</p>	<p>Deletion error gap lengths (context=G1)</p> 	<p>INVALID/ERROR</p>	<p>INVALID/ERROR</p>

T1	18759	<p>Deletion error gap lengths (context=T1)</p> 	INVALID/ERROR	INVALID/ERROR
A2	23020	<p>Deletion error gap lengths (context=A2)</p> 	INVALID/ERROR	INVALID/ERROR
C2	13752	<p>Deletion error gap lengths (context=C2)</p> 	INVALID/ERROR	INVALID/ERROR

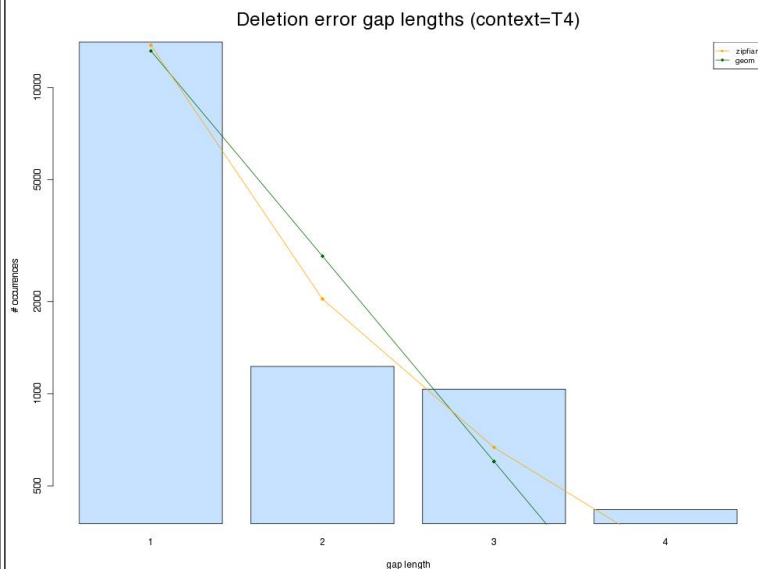
G2	12874		INVALID/ERROR	INVALID/ERROR
T2	20908		INVALID/ERROR	INVALID/ERROR
A3	16382		<p> <math>s = 2.03189175918716</math>  <math>X^2 = 817.976271148564</math>  <math>p\text{-value} = 6.66422943205951e-180</math> </p>	<p> <math>\beta = 0.243430471528195</math>  <math>X^2 = 439.83414022268</math>  <math>p\text{-value} = 1.17636938323754e-97</math> </p>

C3	2976	<p>Deletion error gap lengths (context=C3)</p> 	<p>s = 2.37858007008878  <math>X^2 = 96.0306422172164</math>                      p-value = 1.13119058398999e-22</p>	<p>beta = 0.203212851405623  <math>X^2 = 32.6954845870646</math>                      p-value = 1.07787328561388e-08</p>
G3	2722	<p>Deletion error gap lengths (context=G3)</p> 	<p>s = 2.63735018691134  <math>X^2 = 133.154604880583</math>                      p-value = 8.36381461255204e-31</p>	<p>beta = 0.172644376899696  <math>X^2 = 59.1306357588239</math>                      p-value = 1.47544170844702e-14</p>
T3	16011	<p>Deletion error gap lengths (context=T3)</p> 	<p>s = 2.31285133884244  <math>X^2 = 74.84817906128</math>                      p-value = 5.0833925638005e-18</p>	<p>beta = 0.215915768854065  <math>X^2 = 80.9326996652077</math>                      p-value = 2.33537137181142e-19</p>
			<p>s = 2.56270880377719  <math>X^2 = 881.606024178574</math></p>	<p>beta = 0.237194604282615</p>

A4	16173	<p>Deletion error gap lengths (context=A4)</p>	<p>p-value = 3.64488846510436e-192</p>	<p>X<sup>2</sup> = 1818.25405369029 p-value = 0</p>
C4	1477	<p>Deletion error gap lengths (context=C4)</p>	<p>s = 2.88939322208711 X<sup>2</sup> = 96.3777553423416 p-value = 1.17987592153131e-21</p>	<p>beta = 0.190684931506849 X<sup>2</sup> = 170.434040899389 p-value = 9.78854754134094e-38</p>
G4	1283	<p>Deletion error gap lengths (context=G4)</p>	<p>s = 2.85162448699112 X<sup>2</sup> = 82.6663128330726 p-value = 1.12005216191009e-18</p>	<p>beta = 0.194095477386935 X<sup>2</sup> = 142.720211396448 p-value = 1.02023417531867e-31</p>

T4

16759

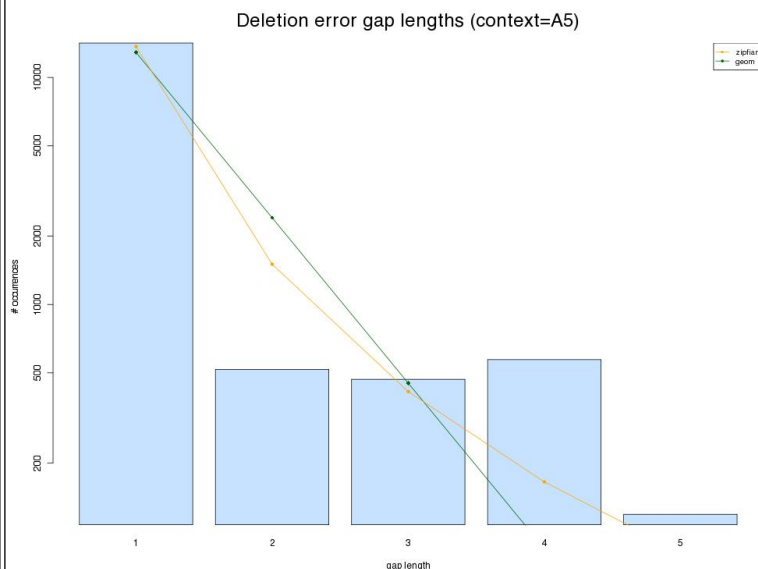


s = 2.75317464623204  
 $X^2 = 575.549475856226$   
 p-value = 1.04958903901607e-125

beta = 0.213524801726970  
 $X^2 = 1921.50787640793$   
 p-value = 0

A5

15857



s = 3.18594408676657  
 $X^2 = 1690.76087031724$   
 p-value = 0

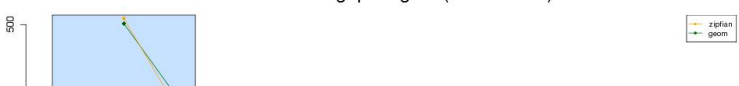
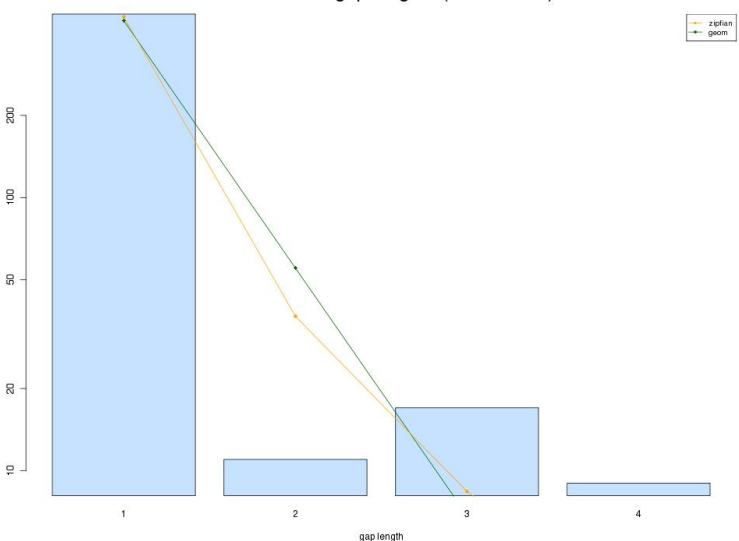
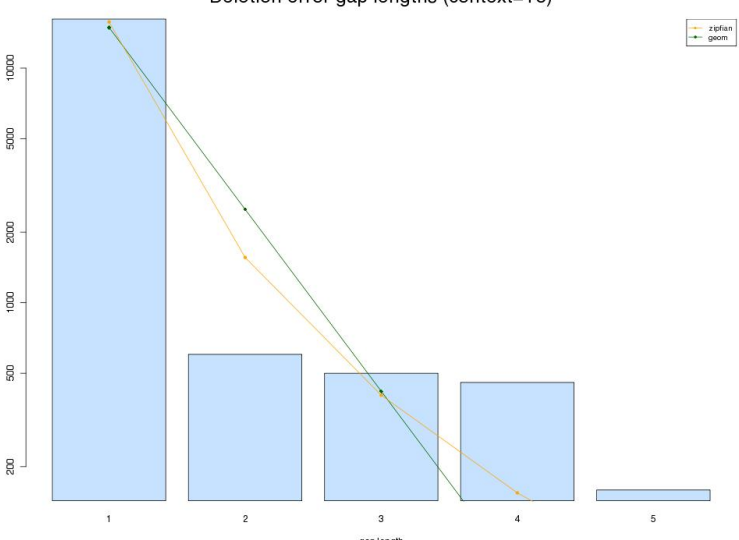
beta = 0.186903907291560  
 $X^2 = 5120.60527690562$   
 p-value = 0

C5

602

s = 3.22114903235939  
 $X^2 = 33.9044961109349$   
 p-value = 4.34242387382752e-08

beta = 0.162726008344923  
 $X^2 = 123.301006163010$   
 p-value = 1.68084127891389e-27


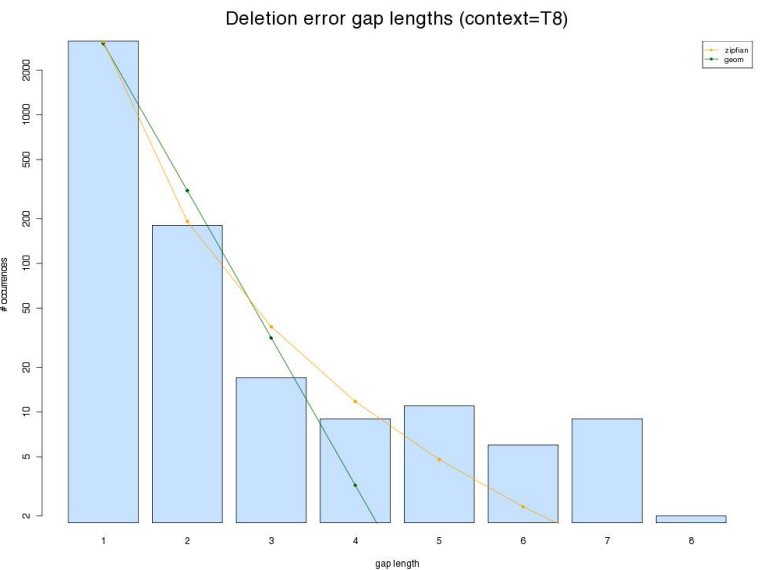
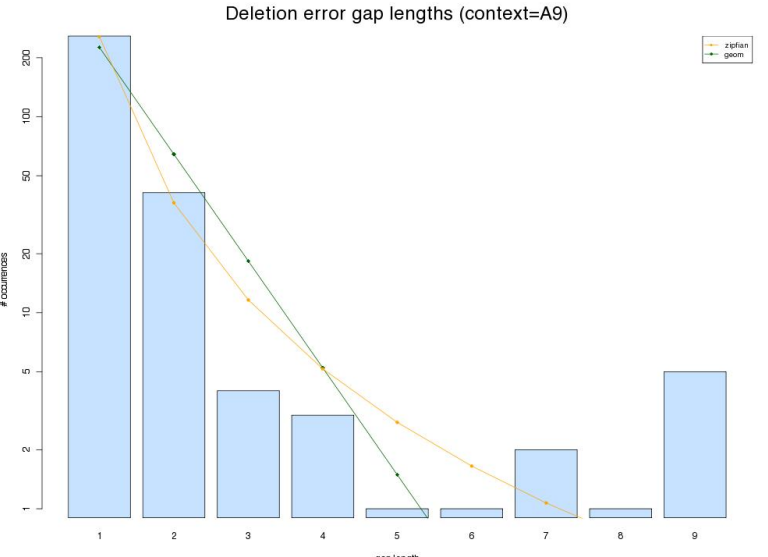
		<p>Deletion error gap lengths (context=C5)</p> 		
G5	507	<p>Deletion error gap lengths (context=G5)</p> 	<p>s = 3.64224010188977  <math>X^2 = 39.6002660625332</math>  p-value = 2.51716383567049e-09</p>	<p>beta = 0.124352331606218  <math>X^2 = 129.624900788309</math>  p-value = 7.11722073259331e-29</p>
T5	17910	<p>Deletion error gap lengths (context=T5)</p> 	<p>s = 3.33412681446039  <math>X^2 = 1316.02203584982</math>  p-value = 4.91300443257319e-285</p>	<p>beta = 0.167712254286909  <math>X^2 = 5531.27562958112</math>  p-value = 0</p>

A6	12208	<p style="text-align: center;">Deletion error gap lengths (context=A6)</p>	<p>s = 3.71940721430899  <math>X^2 = 1466.98118513617</math>                      p-value = <math>2.06571000652441e-316</math></p>	<p>beta = <math>0.141490857946554</math>  <math>X^2 = 13401.8102381151</math>                      p-value = 0</p>
C6	141	<p style="text-align: center;">Deletion error gap lengths (context=C6)</p>	<p>s = 3.25837579750473  <math>X^2 = 15.0286023977881</math>                      p-value = <math>0.00464226003314742</math></p>	<p>beta = <math>0.194285714285714</math>  <math>X^2 = 96.3965818339653</math>                      p-value = <math>5.75040236184136e-20</math></p>
G6	147	<p style="text-align: center;">Deletion error gap lengths (context=G6)</p>	<p>s = 3.00975917382199  <math>X^2 = 38.0424107624465</math>                      p-value = <math>2.76863772356009e-08</math></p>	<p>beta = <math>0.226315789473684</math>  <math>X^2 = 86.4104282104048</math>                      p-value = <math>1.29234522536602e-18</math></p>
			<p>s = 3.68526340601055  <math>X^2 = 1326.62932782919</math></p>	<p>beta = <math>0.143838205645161</math></p>



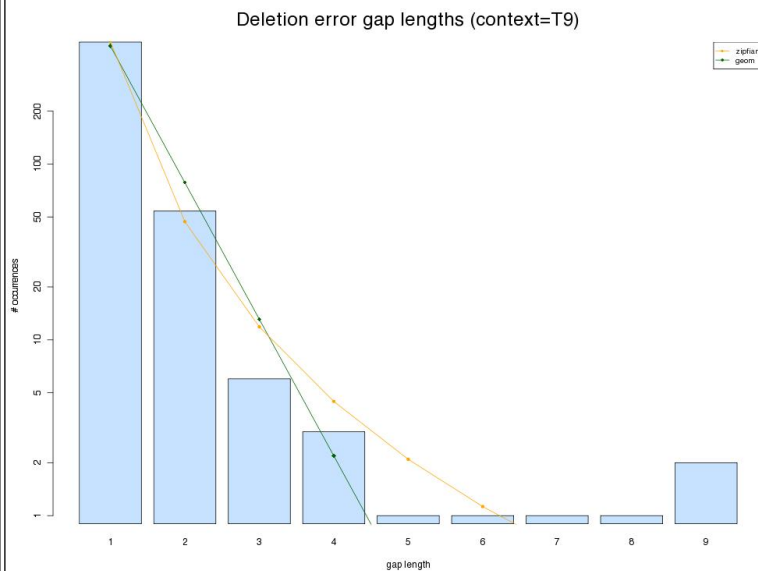
T6	13589	<p>Deletion error gap lengths (context=T6)</p>	<p>p-value = 5.60370849810637e-286</p>	<p>X<sup>2</sup> = 15006.5288421020 p-value = 0</p>
A7	6845	<p>Deletion error gap lengths (context=A7)</p>	<p>s = 4.00062180678743 X<sup>2</sup> = 993.184452956652 p-value = 1.79643340644771e-212</p>	<p>beta = 0.12232337479164 X<sup>2</sup> = 73200.6856035933 p-value = 0</p>
C7	50	<p>Deletion error gap lengths (context=C7)</p>	<p>INVALID/ERROR</p>	<p>INVALID/ERROR</p>
			<p>s = 2.70175083232825</p>	<p>beta =</p>

G7	33	<p>Deletion error gap lengths (context=G7)</p>	$X^2 =$ 4.18906574896551 p-value = 0.123127746334631	0.232558139534884 $X^2 =$ 11.8271425166488 p-value = 0.00270251824227842
T7	9512	<p>Deletion error gap lengths (context=T7)</p>	$s = 4.06371799446981$ $X^2 =$ 958.696932683944 p-value = 5.25176491050475e-205	beta = 0.112355356476297 $X^2 =$ 61614.5294143215 p-value = 0
A8	2359	<p>Deletion error gap lengths (context=A8)</p>	$s = 4.22020049664641$ $X^2 =$ 53.552910330594 p-value = 2.58953003815933e-10	beta = 0.0856589147286821 $X^2 =$ 19943.6924692809 p-value = 0

C8	3	 <p>Deletion error gap lengths (context=C8)</p>	INVALID/ERROR	INVALID/ERROR
T8	3368	 <p>Deletion error gap lengths (context=T8)</p>	<p>s = 4.02454690142885  <math>X^2 = 77.4980669818713</math>                      p-value = 1.17329308708217e-14</p>	<p>beta = 0.102106105038656  <math>X^2 = 36527.5187618464</math>                      p-value = 0</p>
A9	316	 <p>Deletion error gap lengths (context=A9)</p>	<p>s = 2.81494311138736  <math>X^2 = 46.7120990855964</math>                      p-value = 6.352231534372e-08</p>	<p>beta = 0.285067873303167  <math>X^2 = 2609.75024885114</math>                      p-value = 0</p>

T9

563

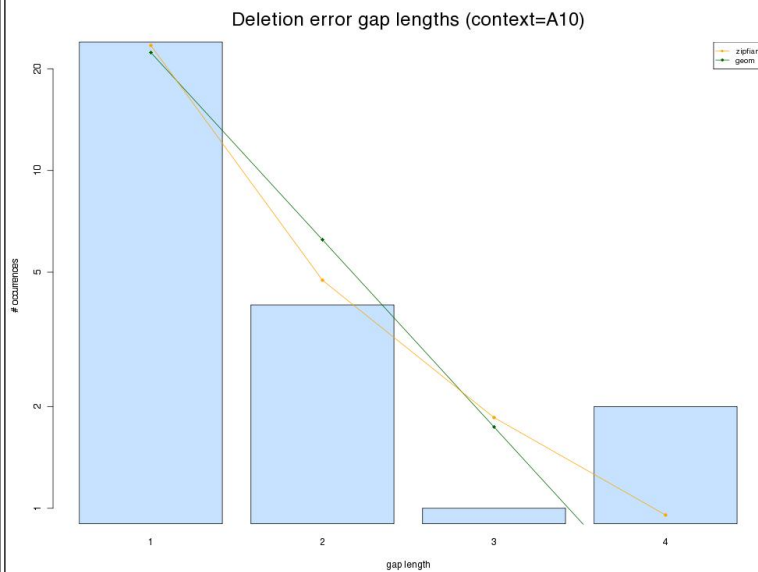


s = 3.3964052043  
 $X^2 = 16.3078188800407$   
 p-value = 0.0224481556328011

beta = 0.167159763313609  
 $X^2 = 14696.9523797269$   
 p-value = 0

A10

31



s = 2.30905454569390  
 $X^2 = 1.66397177236885$   
 p-value = 0.435184201332572

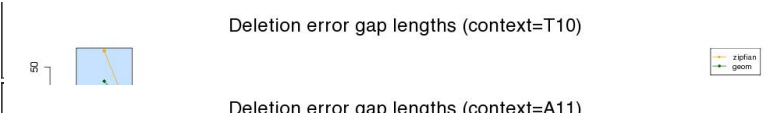
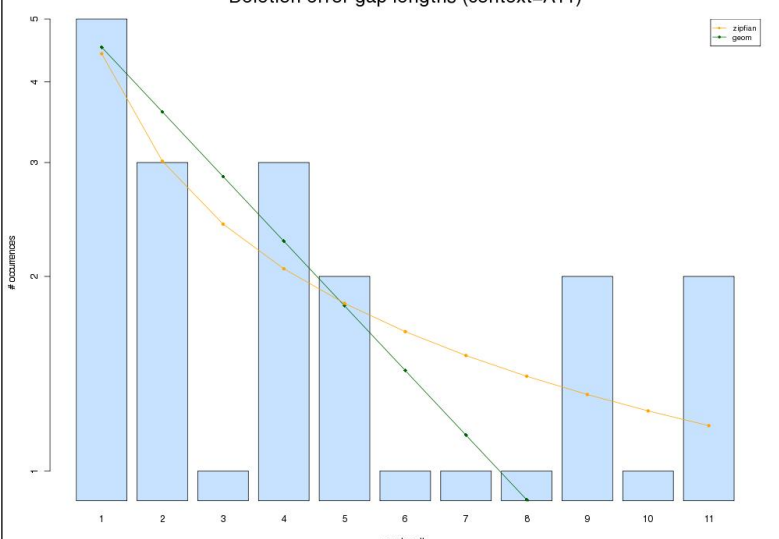
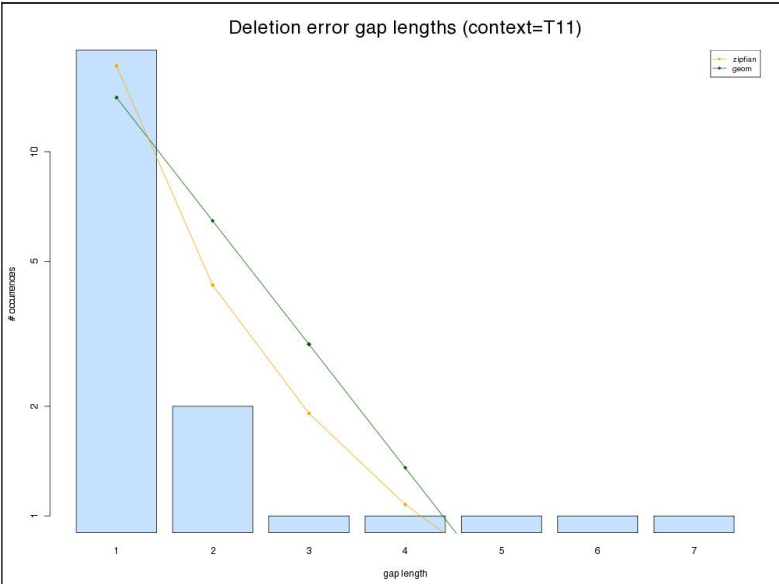
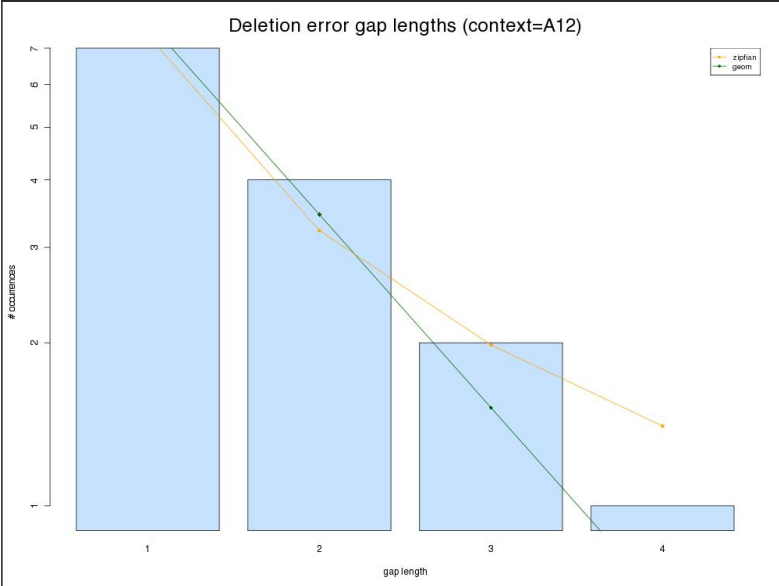
beta = 0.279069767441861  
 $X^2 = 5.96010988258343$   
 p-value = 0.0507900433176548

T10

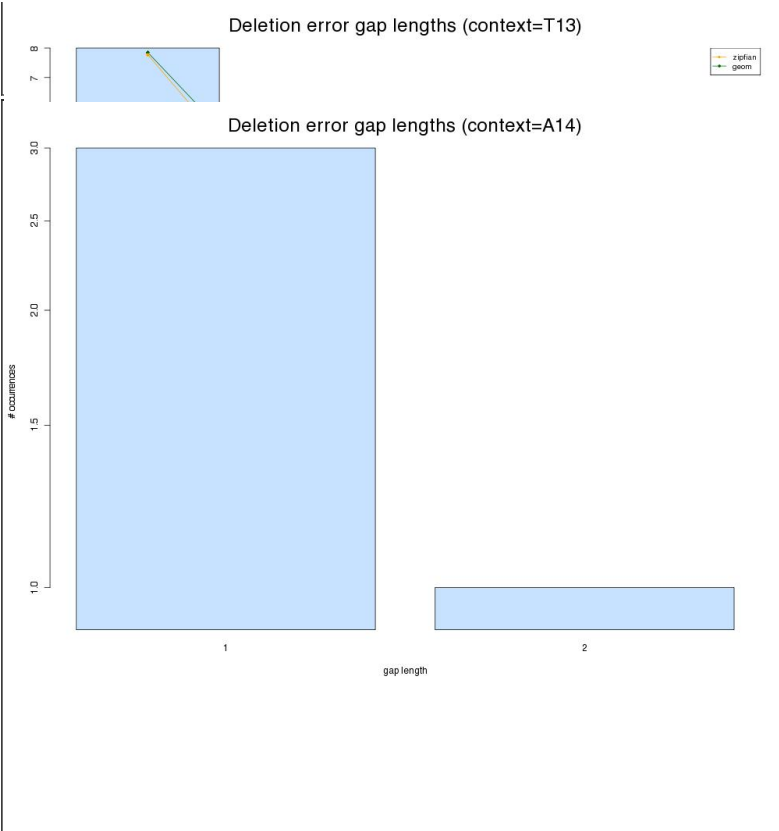
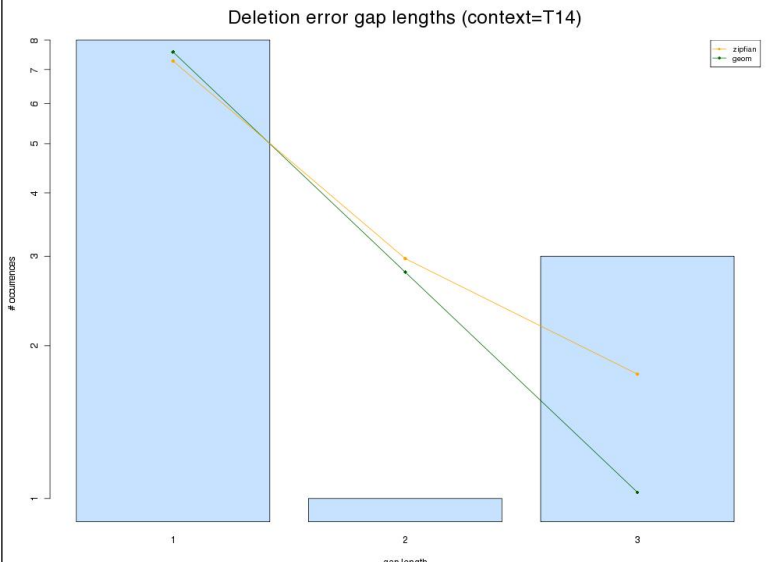
87

s = 2.06543356561978  
 $X^2 = 18.2537902642195$   
 p-value = 0.0194022189545671

beta = 0.491228070175439  
 $X^2 = 98.3144949910199$   
 p-value = 9.43306790447387e-18

<p>A11</p> <p>22</p>	<p>Deletion error gap lengths (context=T10)</p>  <p>Deletion error gap lengths (context=A11)</p> 	<p><math>s = 0.552331016783963</math></p> <p><math>X^2 = 2.87449044007541</math></p> <p>p-value = 0.9690636100729</p>	<p>beta = 0.794392523364486</p> <p><math>X^2 = 9.67462916531639</math></p> <p>p-value = 0.377462119929868</p>
<p>T11</p> <p>26</p>	<p>Deletion error gap lengths (context=T11)</p> 	<p><math>s = 1.99967253983709</math></p> <p><math>X^2 = 3.76959805998939</math></p> <p>p-value = 0.583041651292252</p>	<p>beta = 0.458333333333333</p> <p><math>X^2 = 13.9971376515854</math></p> <p>p-value = 0.0156276083406878</p>
<p>A12</p> <p>14</p>	<p>Deletion error gap lengths (context=A12)</p> 	<p><math>s = 1.19842587491795</math></p> <p><math>X^2 = 0.325326281349461</math></p> <p>p-value = 0.84987742933783</p>	<p>beta = 0.44</p> <p><math>X^2 = 0.4961960437394</math></p> <p>p-value = 0.780283454686194</p>

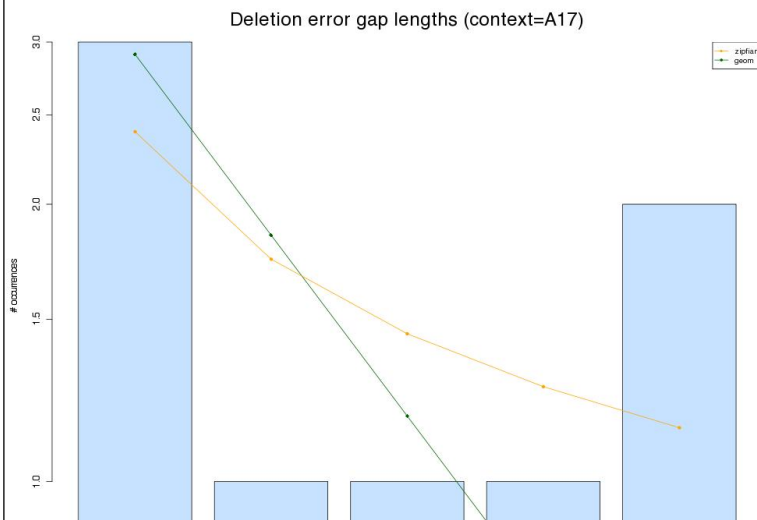
<p>T12</p> <p>25</p>		<p>s = 1.06023118132422  <math>X^2 = 4.81844157250669</math>                  p-value = 0.849839203471597</p>	<p>beta = 0.739583333333333  <math>X^2 = 16.1523816623622</math>                  p-value = 0.0637668476621548</p>
<p>A13</p> <p>20</p>		<p>s = 1.04470658640519  <math>X^2 = 0.956281509675145</math>                  p-value = 0.916351088336651</p>	<p>beta = 0.591836734693878  <math>X^2 = 4.18374006134246</math>                  p-value = 0.381710071034104</p>
<p>T13</p> <p>14</p>		<p>s = 1.30820790518368  <math>X^2 = 0.825761971586434</math>                  p-value = 0.661741034725801</p>	<p>beta = 0.44  <math>X^2 = 2.89580352008832</math>                  p-value = 0.235062989566924</p>

			INVALID/ERROR	INVALID/ERROR
T14	12		<p>s = 1.29262575813854  <math>X^2 = 2.25613272129751</math>                  p-value = 0.133086042964734</p>	<p>beta = 0.368421052631579  <math>X^2 = 4.95121637856678</math>                  p-value = 0.0260723183721473</p>
A15	11		<p>s = 0.243359866092211  <math>X^2 = 0.884776682504825</math>                  p-value = 0.97131395173215</p>	<p>beta = 0.73170731707317  <math>X^2 = 5.99803332543462</math>                  p-value = 0.306410331443849</p>

<p>T15</p> <p>3</p>		<p>INVALID/ERROR</p>	<p>INVALID/ERROR</p>
<p>A16</p> <p>12</p>		<p><math>s = 0.234428984065603</math></p> <p><math>X^2 = 1.21155639204441</math></p> <p>p-value = 0.99065837569117</p>	<p>beta = 0.789473684210526</p> <p><math>X^2 = 8.10652266288131</math></p> <p>p-value = 0.323294687645877</p>
<p>T16</p> <p>6</p>		<p><math>s = 0.122967886301763</math></p> <p><math>X^2 = 0.650635373179079</math></p> <p>p-value = 0.722297852847837</p>	<p>beta = 0.6</p> <p><math>X^2 = 4.45696790123457</math></p> <p>p-value = 0.107691572180377</p>



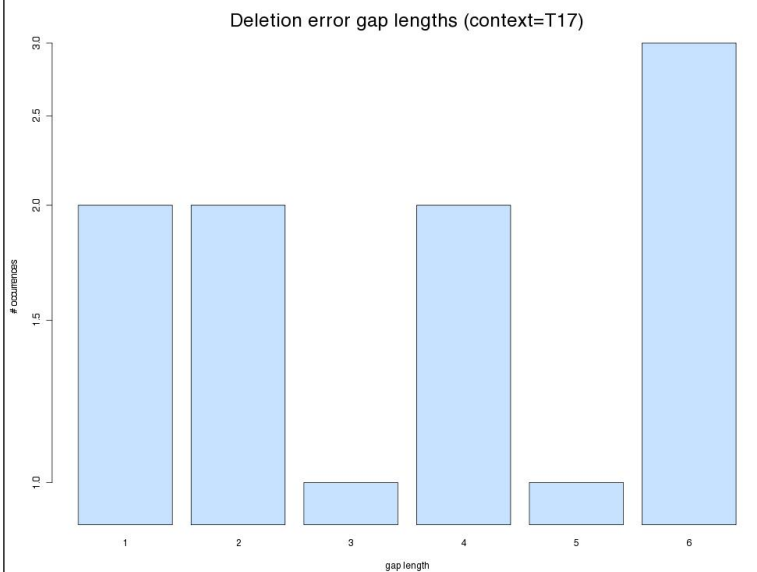
A17 8



s = 0.459721443557304  
 $X^2 = 1.30317506141628$   
 p-value = 0.728379264884578

beta = 0.636363636363636  
 $X^2 = 5.36640432990757$   
 p-value = 0.146851087521449

T17 11



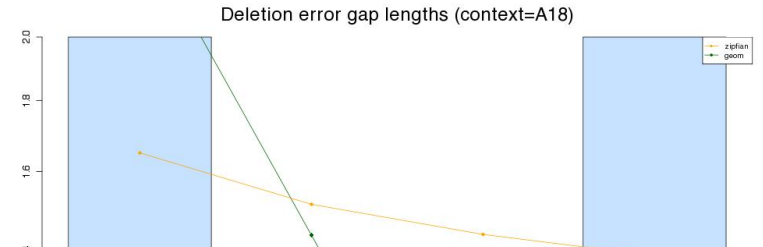
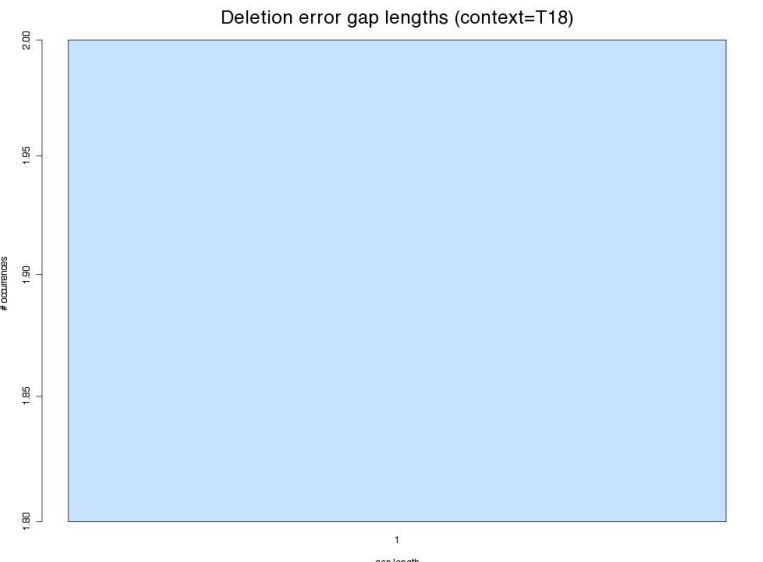
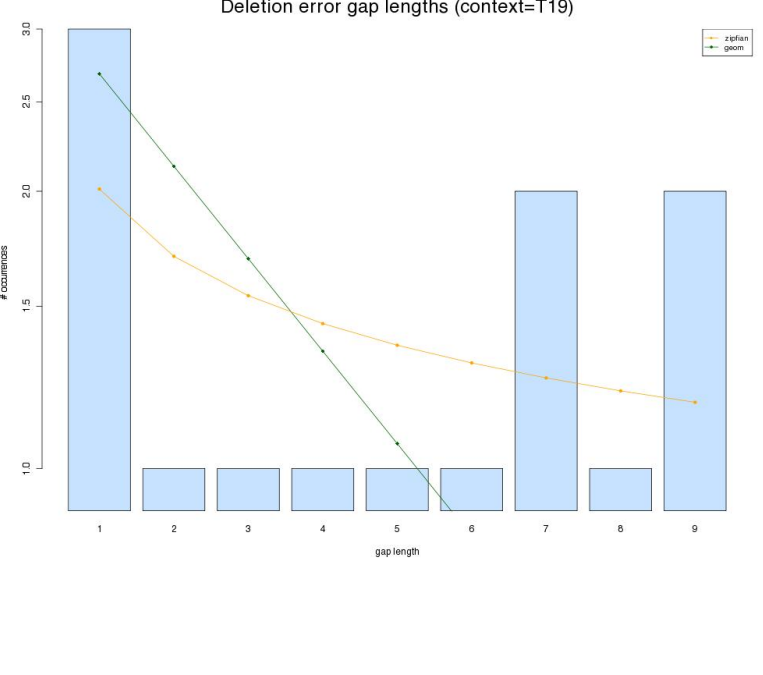
INVALID/ERROR

INVALID/ERROR

A18 6

s = 0.122967886301763  
 $X^2 = 0.650635373179079$

beta = 0.6  
 $X^2 = 4.45696790123457$

		 <p>Deletion error gap lengths (context=A18)</p>	<p>p-value = 0.722297852847837</p>	<p>p-value = 0.107691572180377</p>
T18	2	 <p>Deletion error gap lengths (context=T18)</p>	<p>INVALID/ERROR</p>	<p>INVALID/ERROR</p>
T19	13	 <p>Deletion error gap lengths (context=T19)</p>	<p>s = 0.242575021243014 X<sup>2</sup> = 2.31339813280911 p-value = 0.94048125810666</p>	<p>beta = 0.793650793650794 X<sup>2</sup> = 9.98070049857975 p-value = 0.189669794087238</p>
A20	3		<p>INVALID/ERROR</p>	<p>INVALID/ERROR</p>

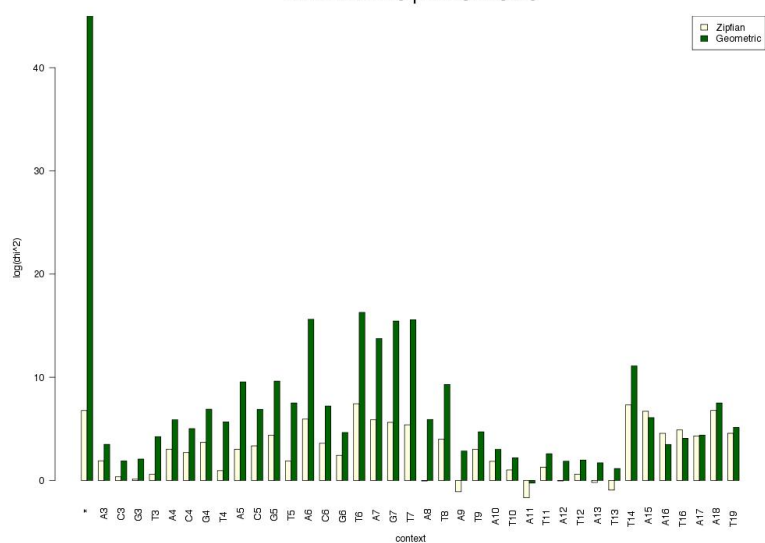
T23	4		INVALID/ERROR	INVALID/ERROR
A24	8		INVALID/ERROR	INVALID/ERROR

**Chi square statistics**

Deletion : chi square statistics



Deletion: chi square statistics

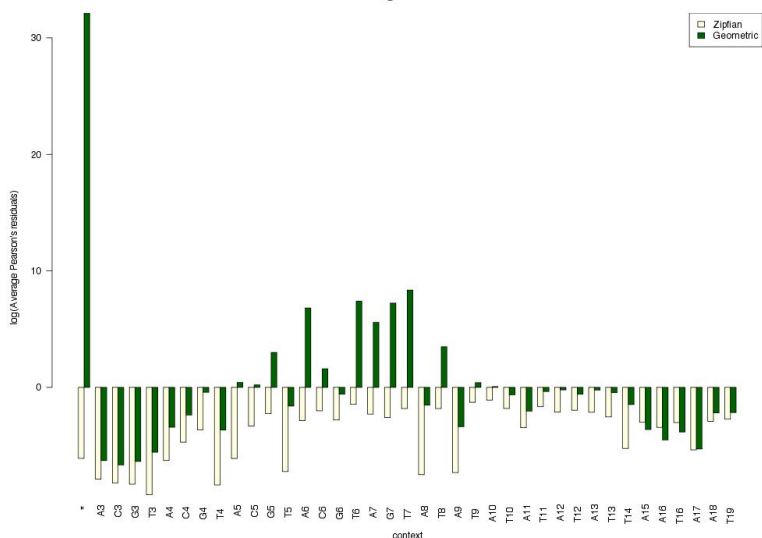


### Average Pearson's residuals

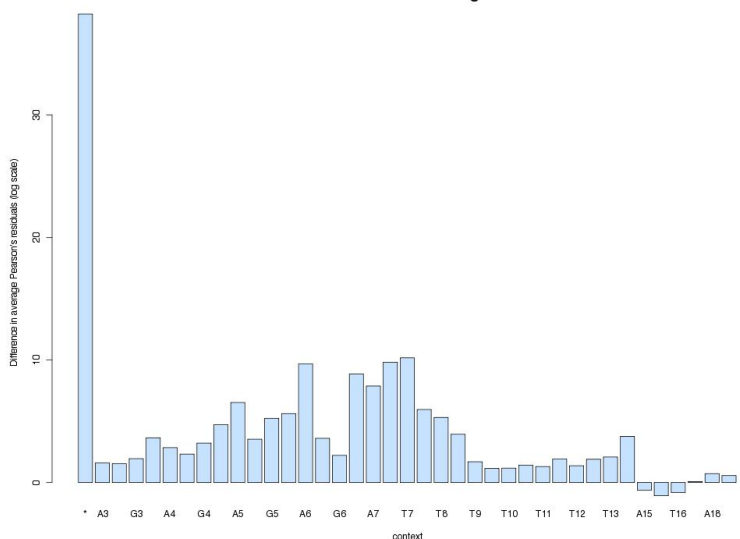
Deletion: Average Pearson residuals



Deletion : Average Pearson residuals

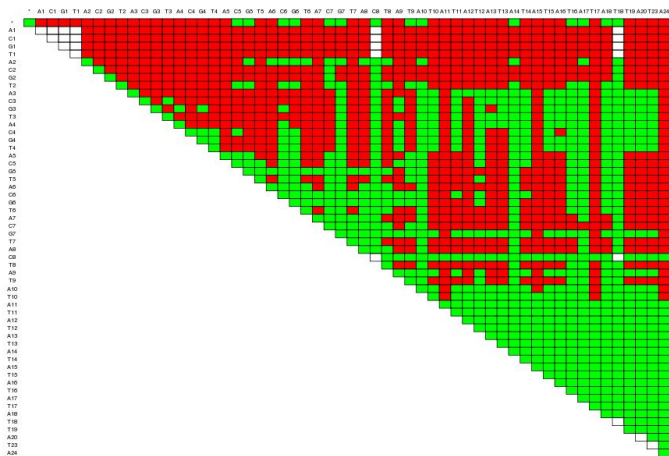


Deletion: Difference between average Pearson residuals



## Mann U Tests

Deletion : Mann-Whitney tests by context



## Mann U Tests by context length

Deletion : Mann-Whitney tests by context length

