

770 **G. Extra experiments**771 **G.1. Growth of group privacy with step size**

773 In this section, we demonstrate the growth of group privacy parameters with the step size. In each plot, we fix the sampling
774 rate and noise parameters and calculate the group privacy at various step sizes. In general, we observe that the growth of
775 group privacy is faster in the smaller iterations, but it becomes slower as the number of steps further increase.

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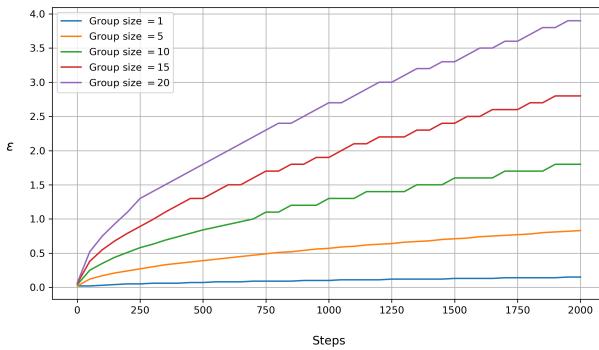


Figure 1: Noise Multiplier=10.00, Sampling rate=0.01.

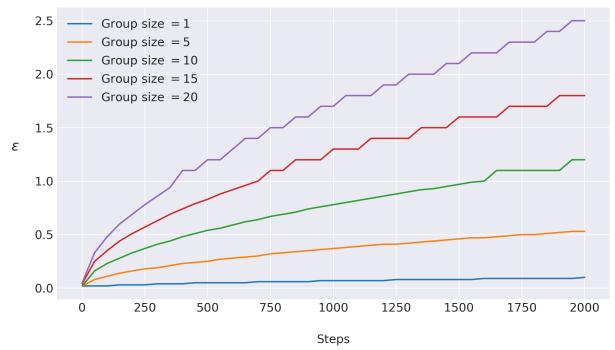


Figure 2: Noise Multiplier=15.00, Sampling rate=0.01.

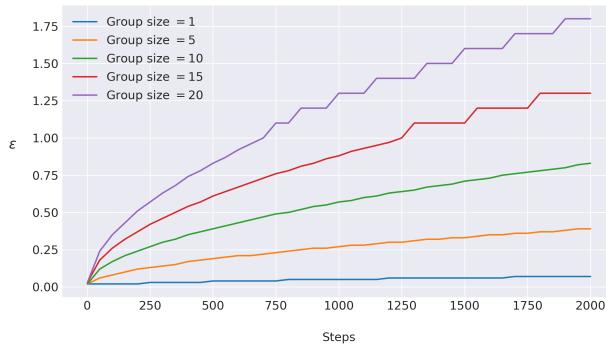


Figure 3: Noise Multiplier=20.00, Sampling rate=0.01.

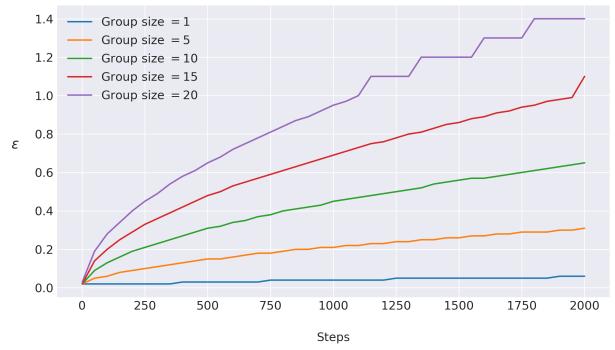


Figure 4: Noise Multiplier=25.00, Sampling rate=0.01.

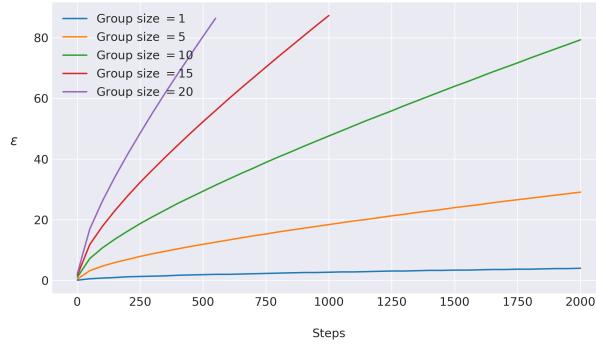


Figure 5: Noise Multiplier=5.00, Sampling rate=0.10.

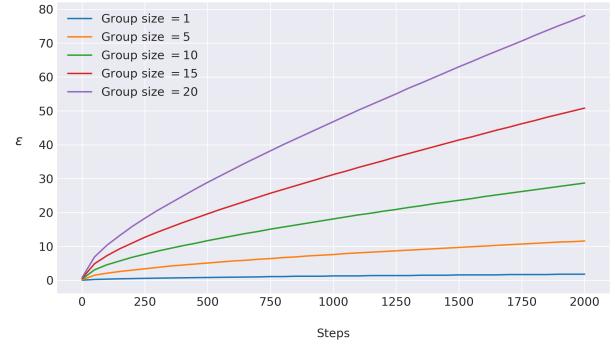


Figure 6: Noise Multiplier=10.00, Sampling rate=0.10.

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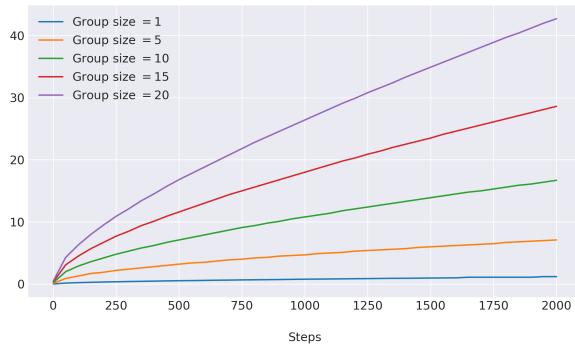


Figure 7: Noise Multiplier=15.00, Sampling rate=0.10.

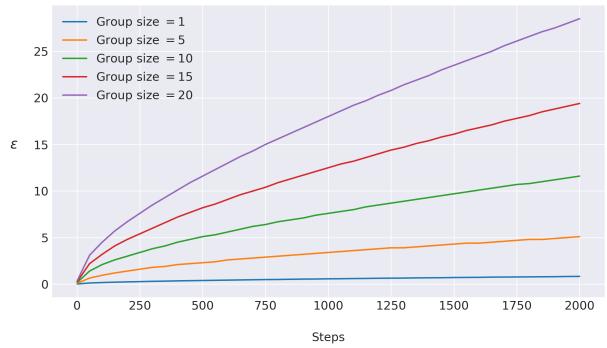


Figure 8: Noise Multiplier=20.00, Sampling rate=0.10.

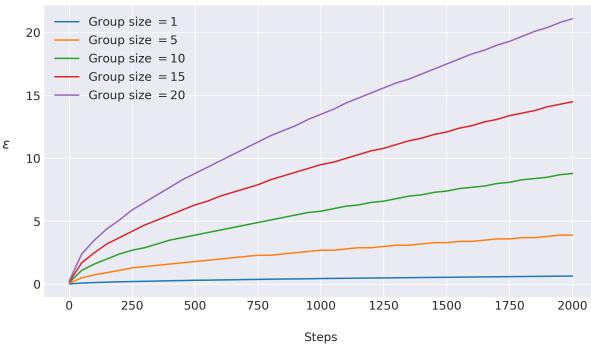


Figure 9: Noise Multiplier=25.00, Sampling rate=0.10.

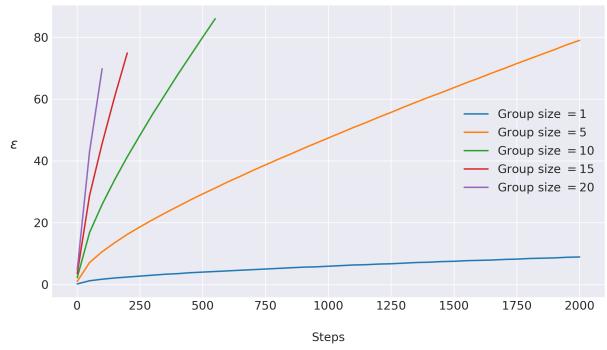


Figure 10: Noise Multiplier=5.00, Sampling rate=0.20.

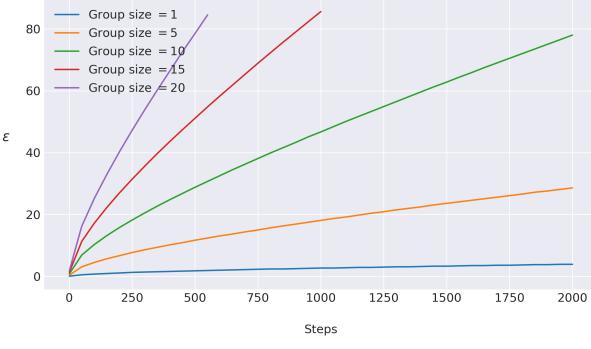


Figure 11: Noise Multiplier=10.00, Sampling rate=0.20.

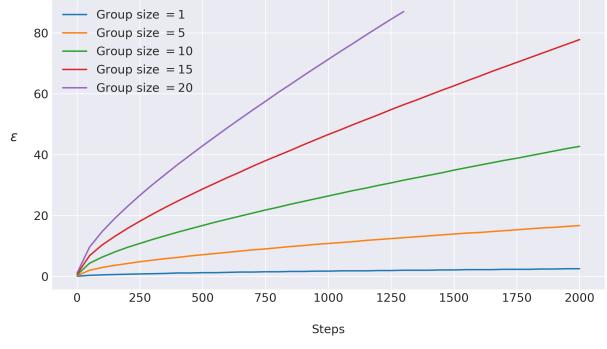


Figure 12: Noise Multiplier=15.00, Sampling rate=0.20.

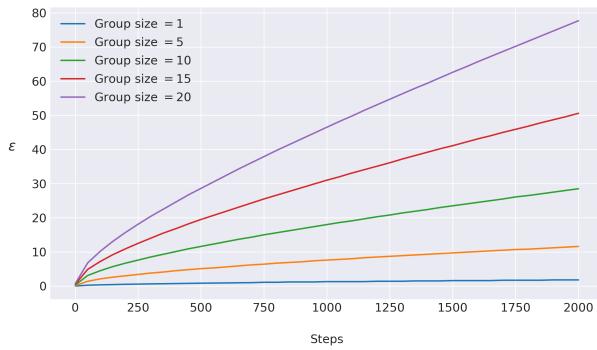


Figure 13: Noise Multiplier=20.00, Sampling rate=0.20.

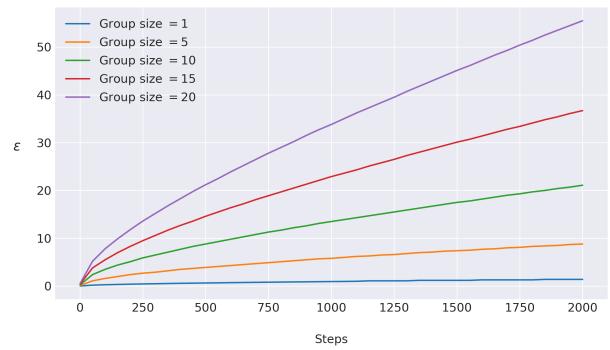


Figure 14: Noise Multiplier=25.00, Sampling rate=0.20.

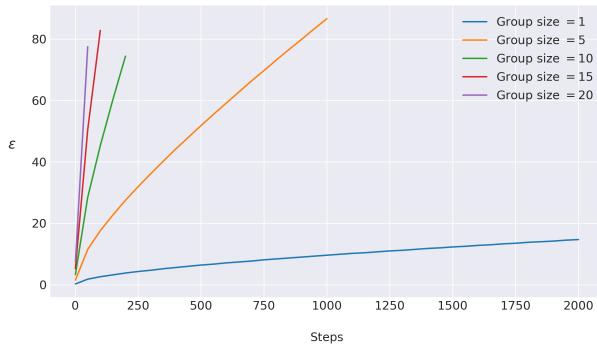


Figure 15: Noise Multiplier=5.00, Sampling rate=0.30.

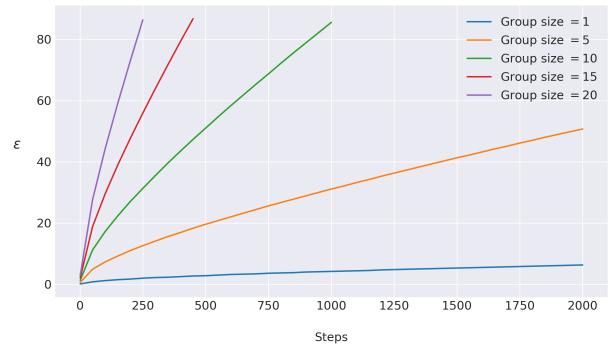


Figure 16: Noise Multiplier=10.00, Sampling rate=0.30.

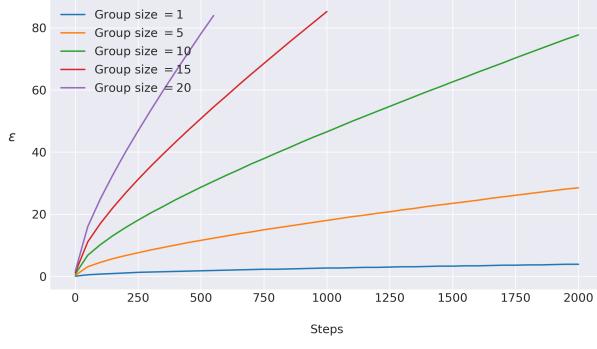


Figure 17: Noise Multiplier=15.00, Sampling rate=0.30.

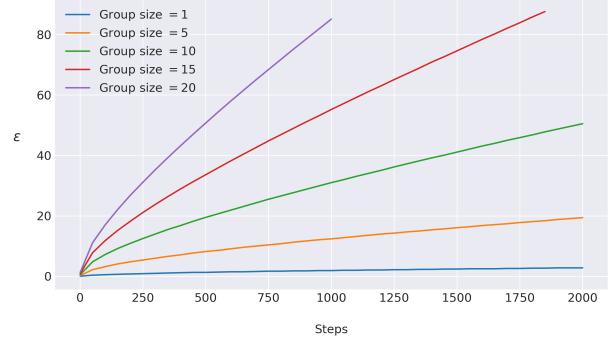


Figure 18: Noise Multiplier=20.00, Sampling rate=0.30.

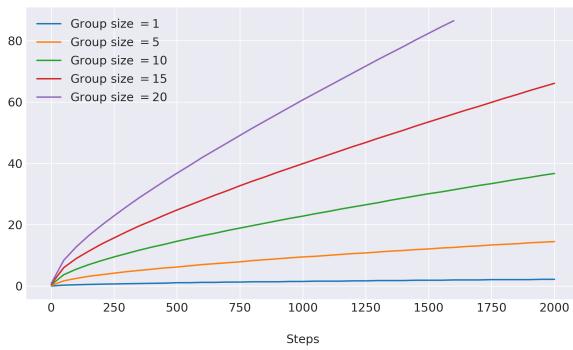


Figure 19: Noise Multiplier=25.00, Sampling rate=0.30.

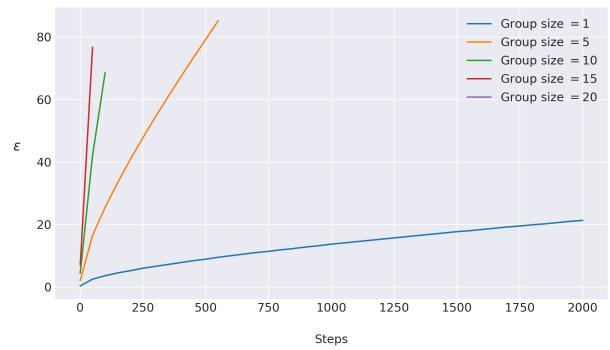


Figure 20: Noise Multiplier=5.00, Sampling rate=0.40.

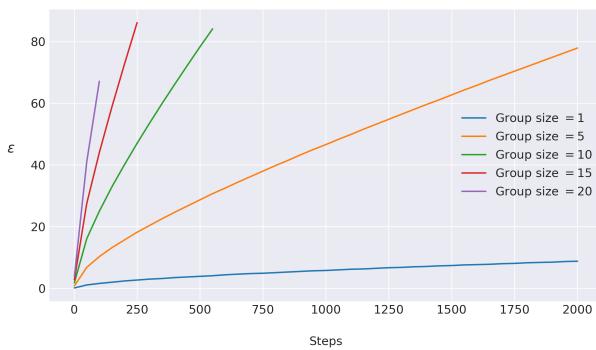


Figure 21: Noise Multiplier=10.00, Sampling rate=0.40.

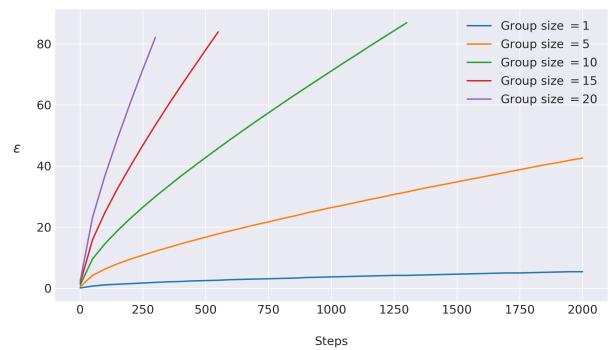


Figure 22: Noise Multiplier=15.00, Sampling rate=0.40.

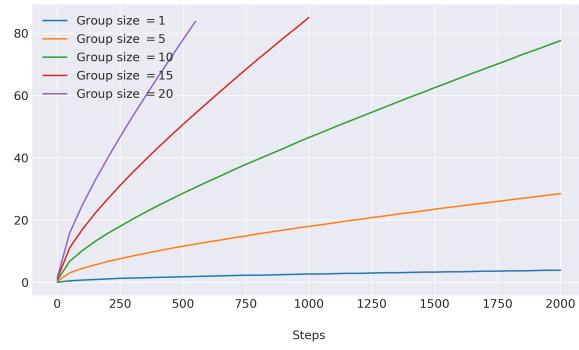


Figure 23: Noise Multiplier=20.00, Sampling rate=0.40.

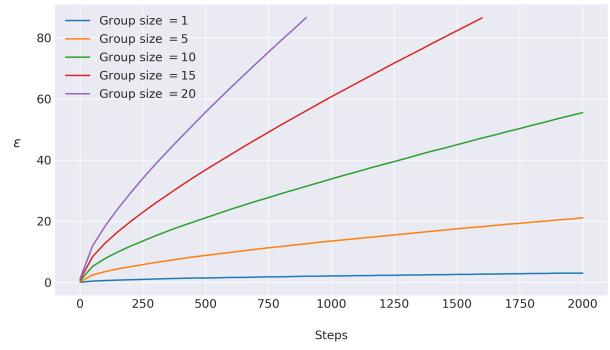
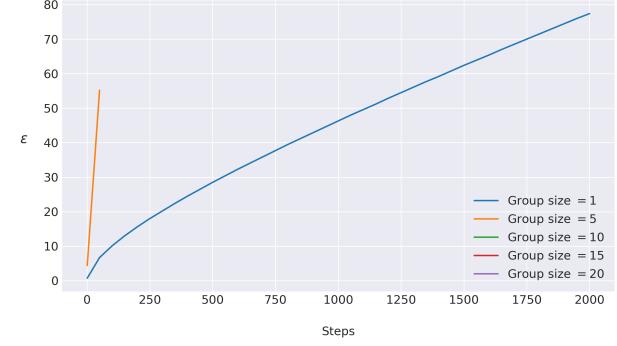
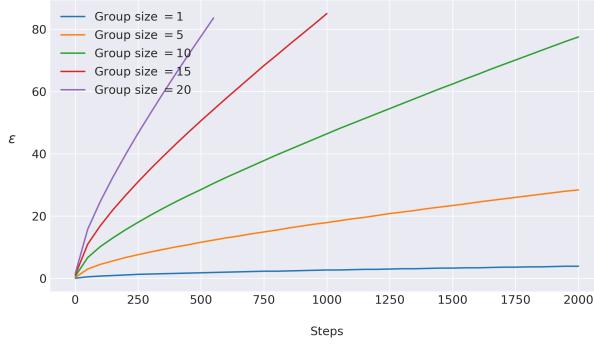
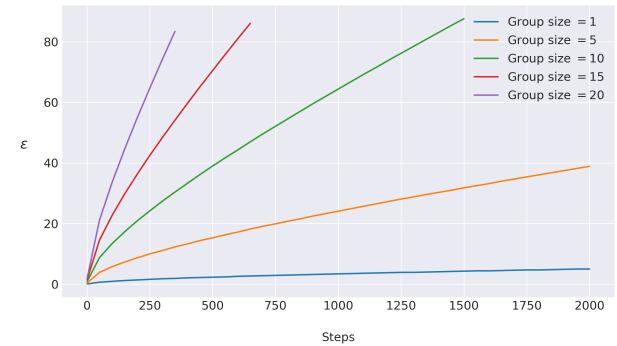
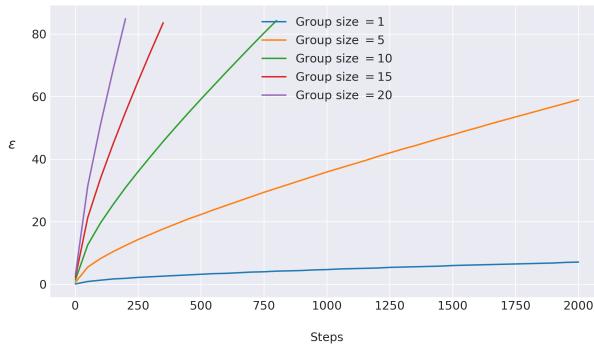
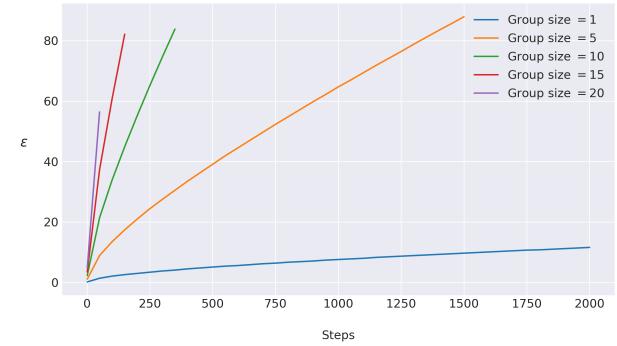
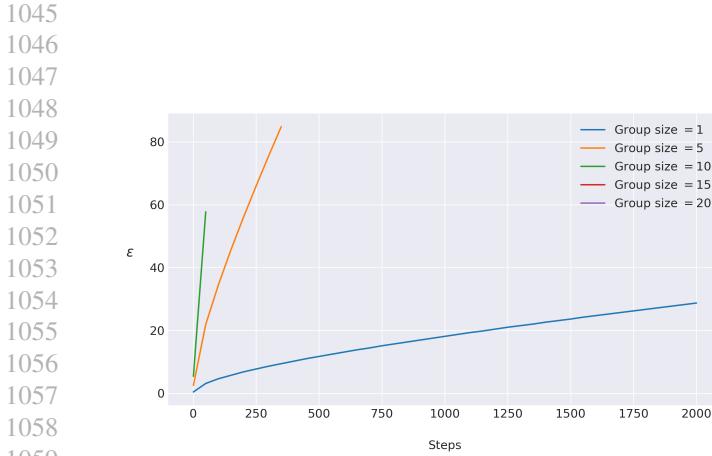
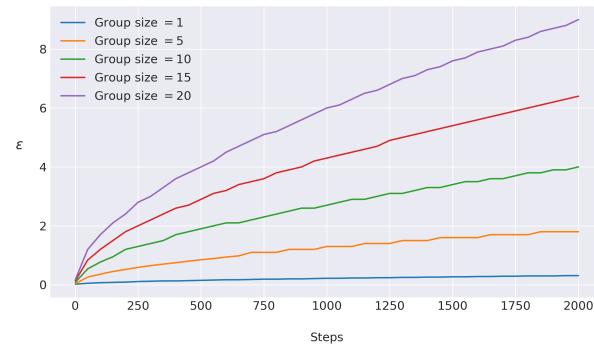
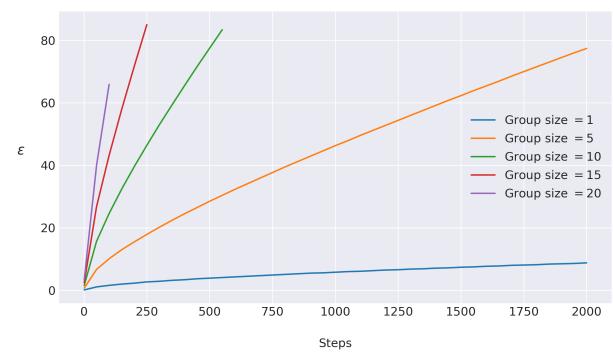
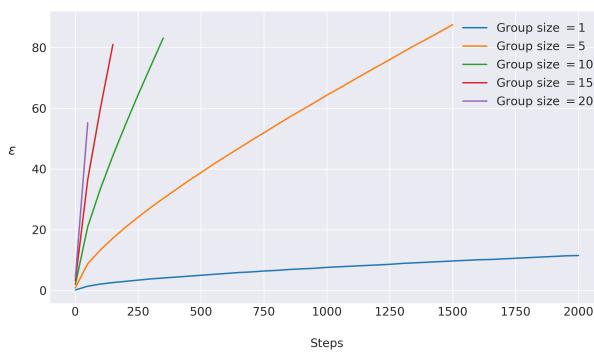
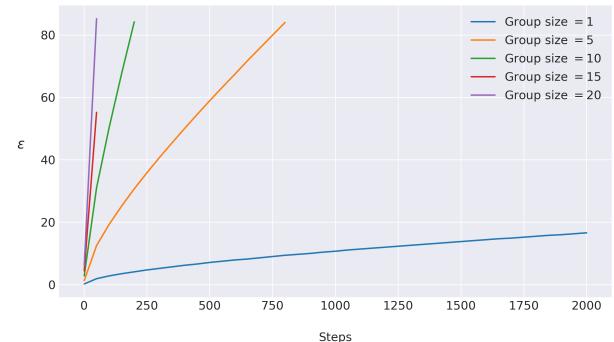
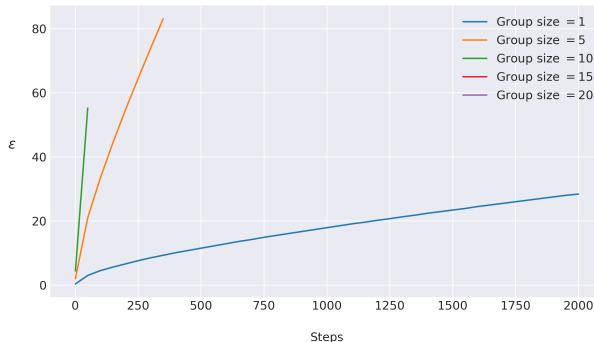


Figure 24: Noise Multiplier=25.00, Sampling rate=0.40.





1155 **G.2. Effect of sub-sampling rate on group privacy at various step sizes**

1156 In this section, we demonstrate the effect of sub-sampling rate on the group privacy. In the following plots, we fix the step
1157 size to a fixed value T . We also fix a list of sampling rates $\{p_i\}_{i \in [10]}$. For each sampling rate, we carefully select a σ_i so
1158 that the privacy cost of performing T steps with sampling rate p_i at noise σ_i is exactly the same. Then we calculate the group
1159 privacy for all these settings and compare them. Our initial experiments suggested that decreasing the sampling rate will
1160 improve group privacy. However, an anonymous reviewer suggested that we ablate this with various step sizes. Following,
1161 we try to perform this ablation by plotting figures for various step sizes. We observe that the effect of sub-sampling rate on
1162 group privacy is much more pronounced at smaller step sizes.
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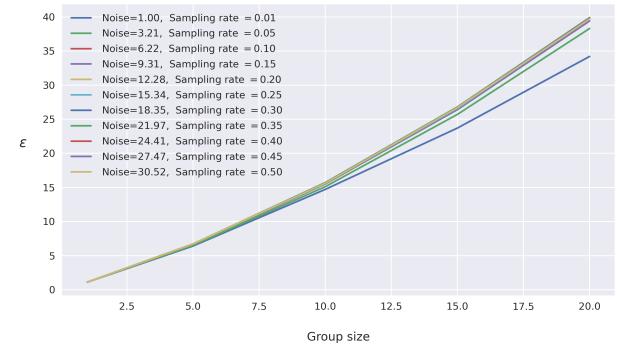
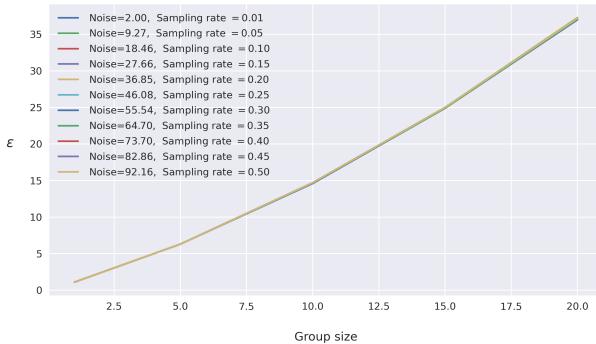
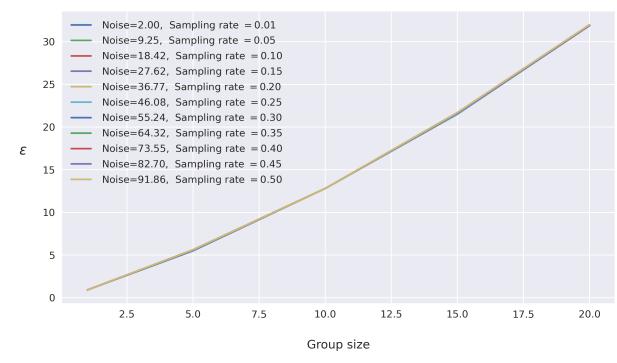
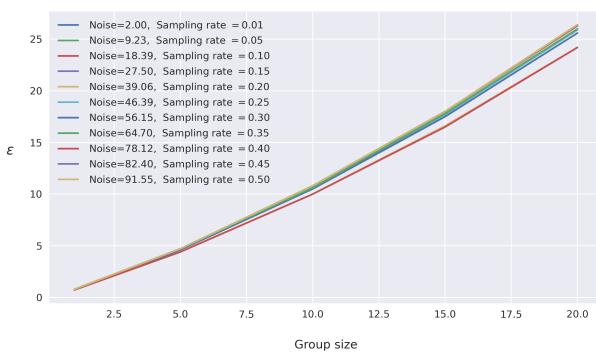
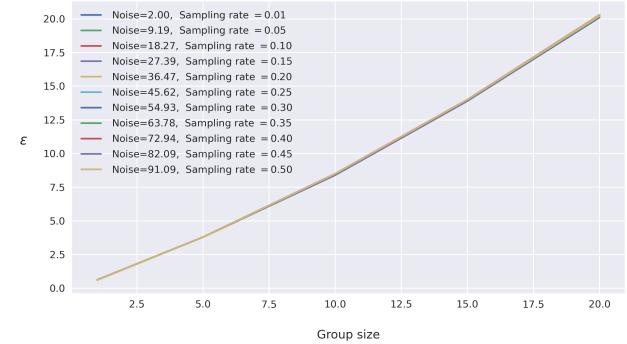
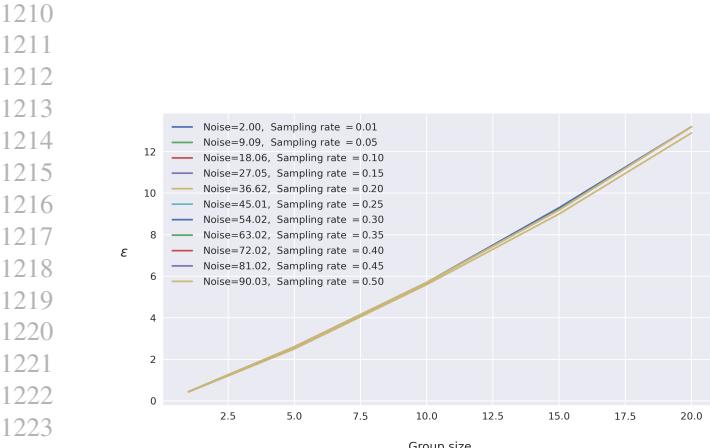
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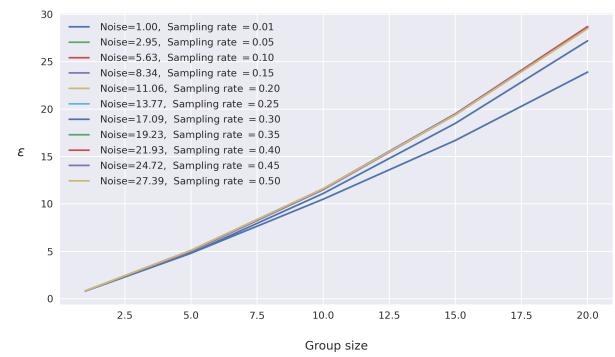
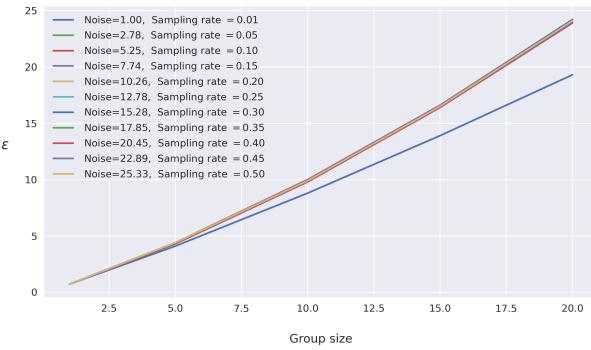
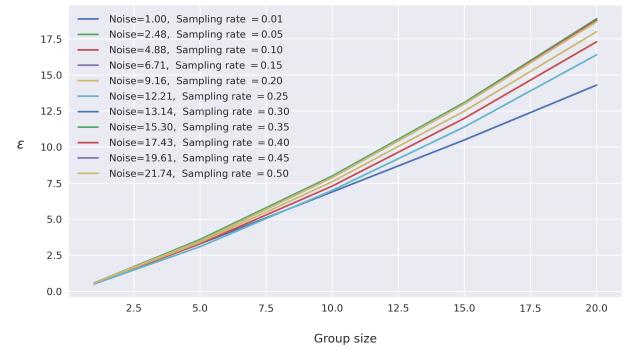
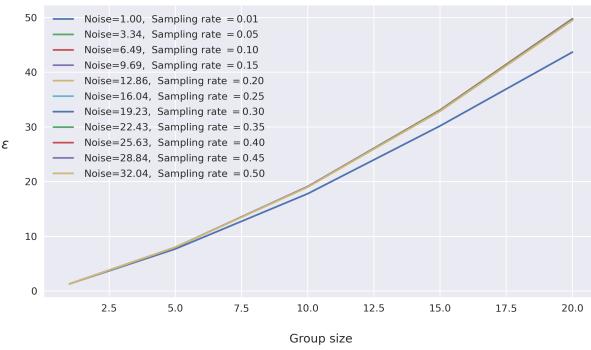
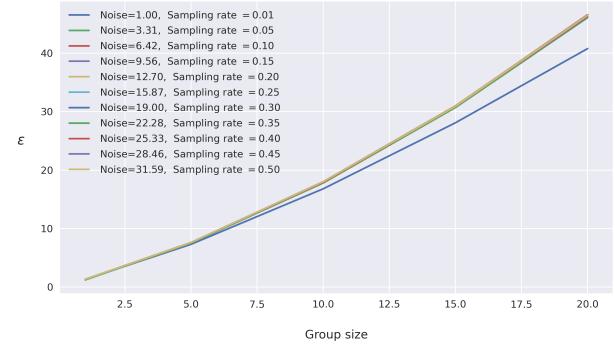
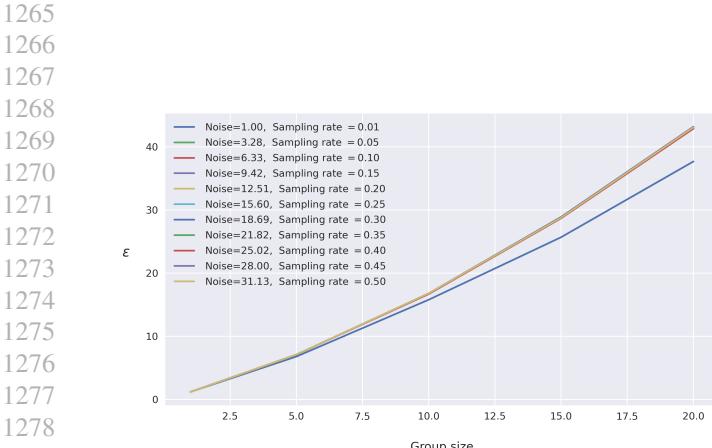
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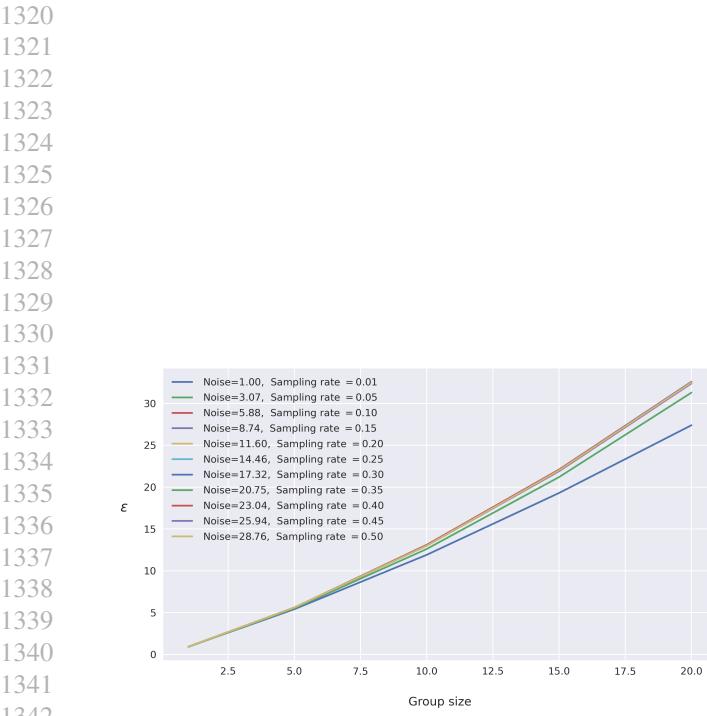


Figure 48: Steps=200.

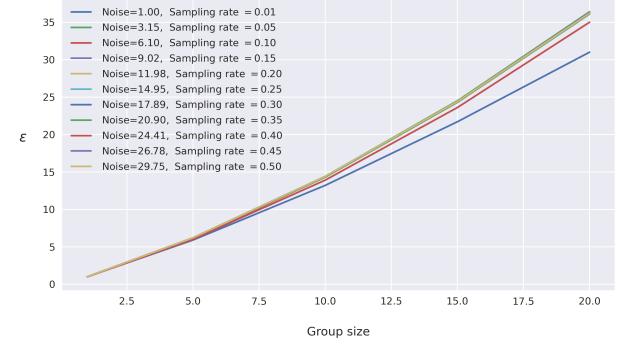


Figure 49: Steps=250.