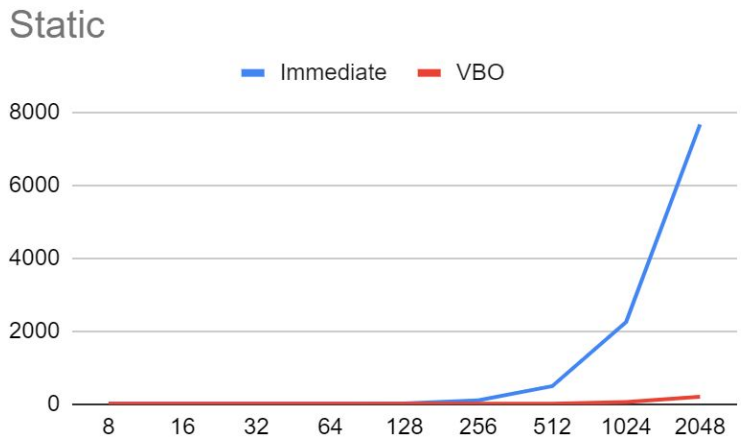
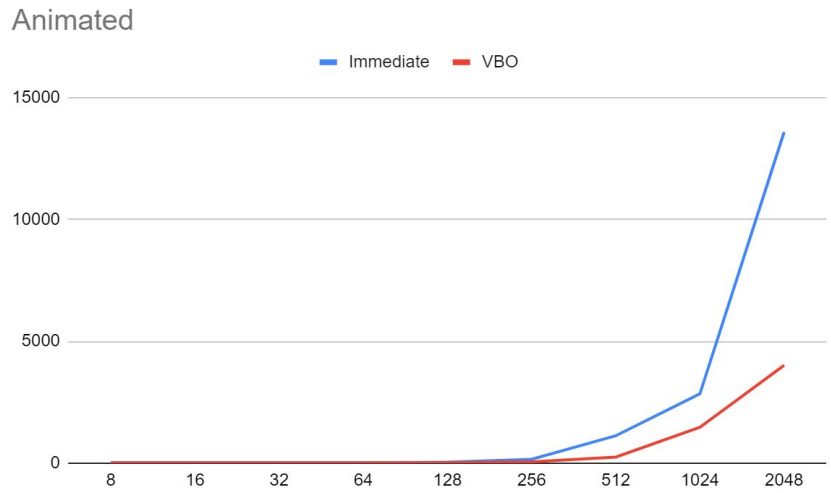
RTR Replacement Milestone 1

(please find source code under Sinewave3D/main.cpp)

1. Static geometry



   a.
   b. It is evident that the relationship between number of polygons and rendering time is exponential, this is especially evident for the immediate mode rendering. This relationship is also evident for VBO mode rendering, however the time stays significantly lower.
   c. There is a 40x factor speedup at 1024 tessellation between VBO and Immediate mode, this factor maintains at roughly 39x factor speedup when increased to 2048 tessellation
2. Animated Geometry



   a.
   b. From the graph it is shown that there is once again an exponential increase in the time taken to render a frame as the tessellation increases for Immediate mode. It

is also much clearer the same exponential relationship for the VBO mode rendering with animated geometry.

   c. There is a 2x factor speedup at 1024 tessellation between VBO and Immediate mode, this factor increases to almost 4x at 2048 tessellation

3. The max speedup for static is 40x (1024 tessellation) vs animated at 4x (2048 tessellation).
4. Increasing the number of lights has no effect on performance. This is due to the architecture of modern GPU's being required to be able to process up to 8 lights without any impact on performance.
5. The performance of wireframe is much lower than filled. In fact at 2048 tessellation, filled is faster by a factor of 8x.
6. With cards similar to that in my Macbook air 2014, it should be possible to render up to 400million in one second when completely optimised (under benchmark conditions). It would take roughly 1-2ms to render 1 million triangles under optimal conditions.