

An Investigation into the Thickness of Culture Dishes



Method

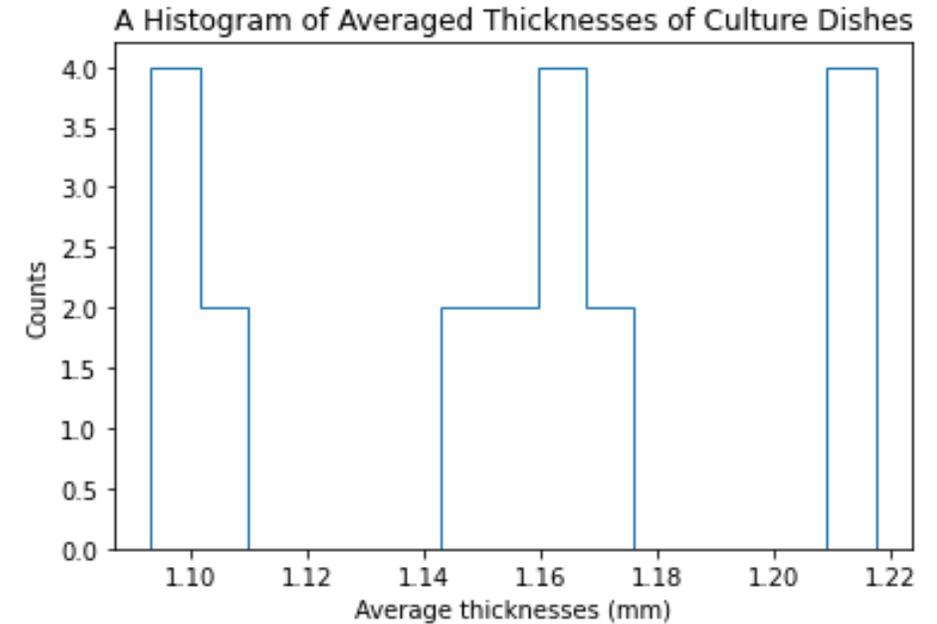
- Two batches of culture dishes were measured, 39 dishes in total (one was unusable).
- Each dish was clamped down and measured with a micrometer.
- 5 measurements of each dish were taken, sampling semi-uniformly across each dish's base. Averages and error were then found from these measurements.



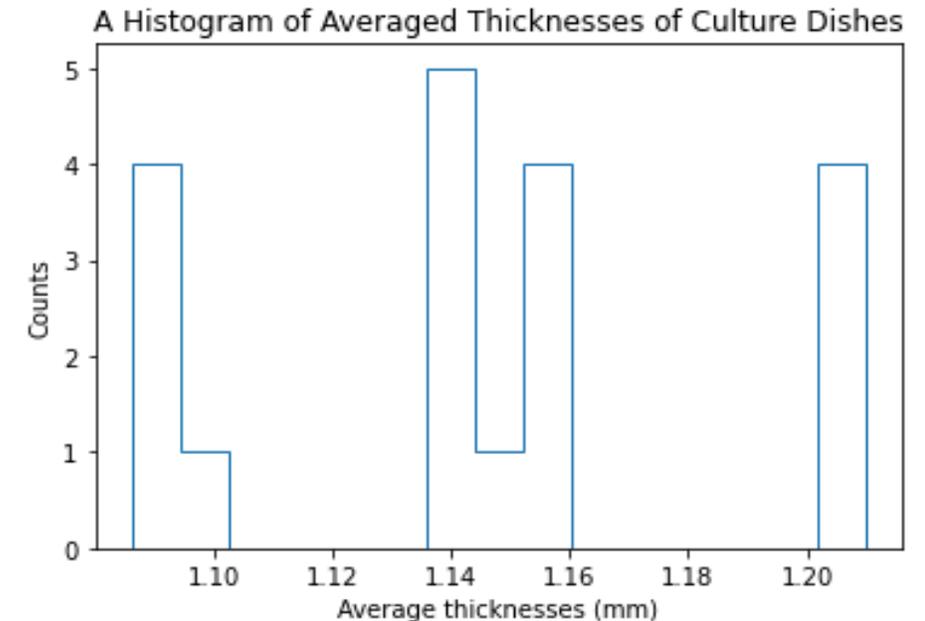
Results

- Firstly, the average thicknesses of the wells were compared to one another using histograms.
- These show that they are separated into three distinct regions.
- These regions are in roughly the same places across batches.
- It was suggested that this is because the output of several dish-making machines (with slightly different moulds) all feed into one batch .

Batch One:



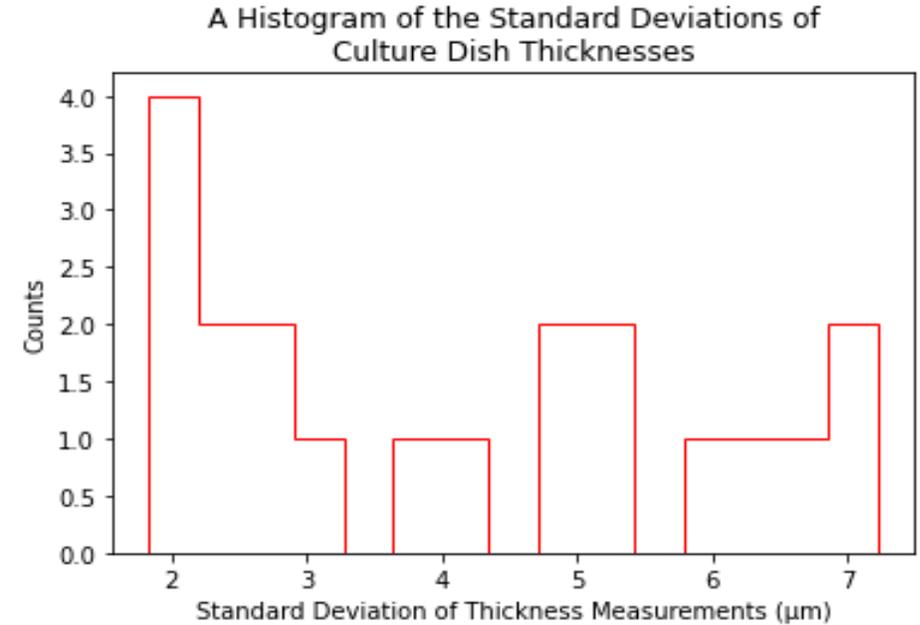
Batch Two:



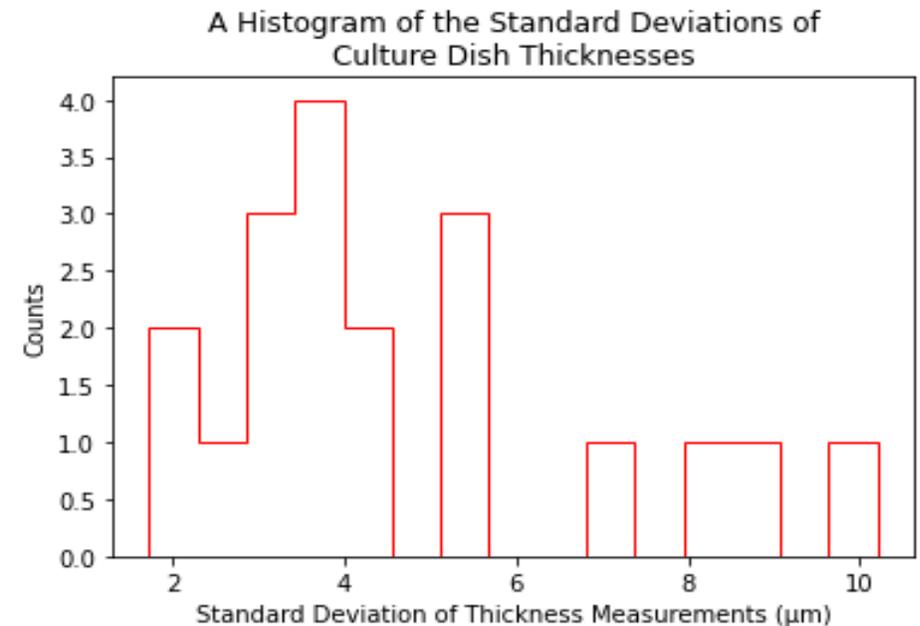
Results

- Next, the variation of the thickness of individual dishes between measurements was examined.
- Histograms show that each dish is reasonably uniform throughout.
- Highest standard deviation calculated was $10.21\mu\text{m}$ (4 s.f.)

Batch One:

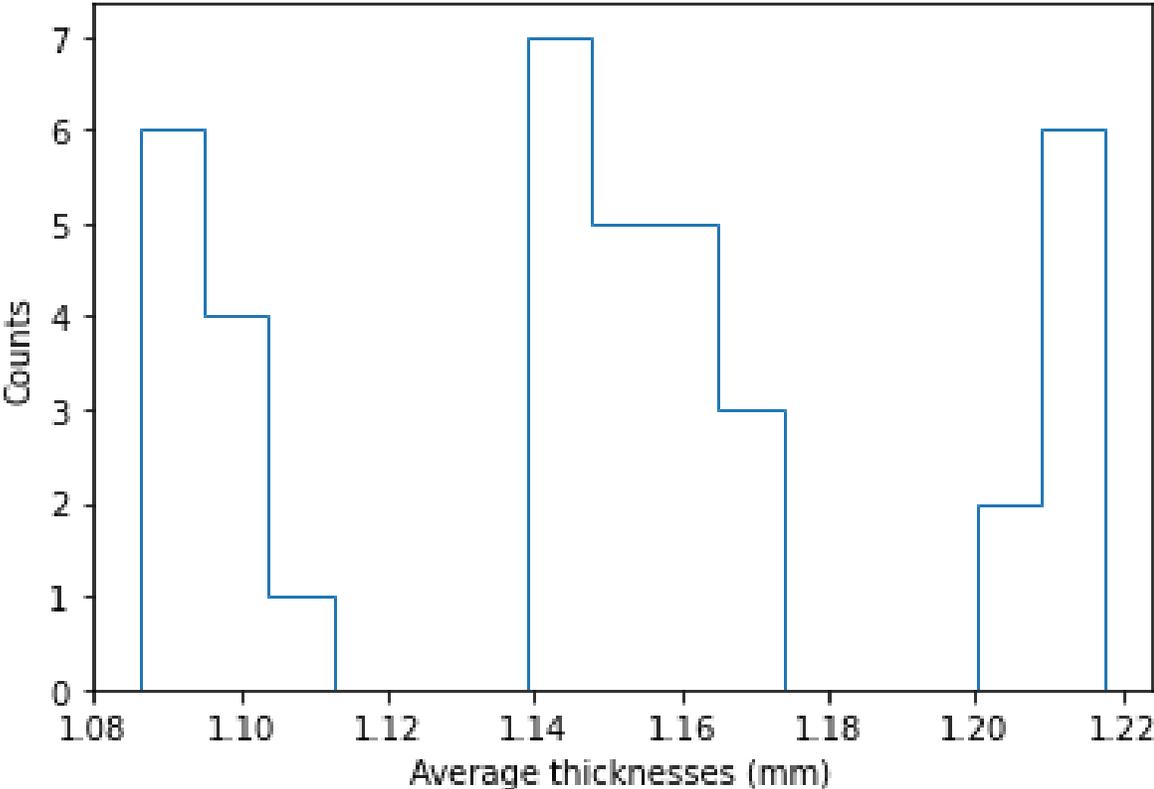


Batch Two:

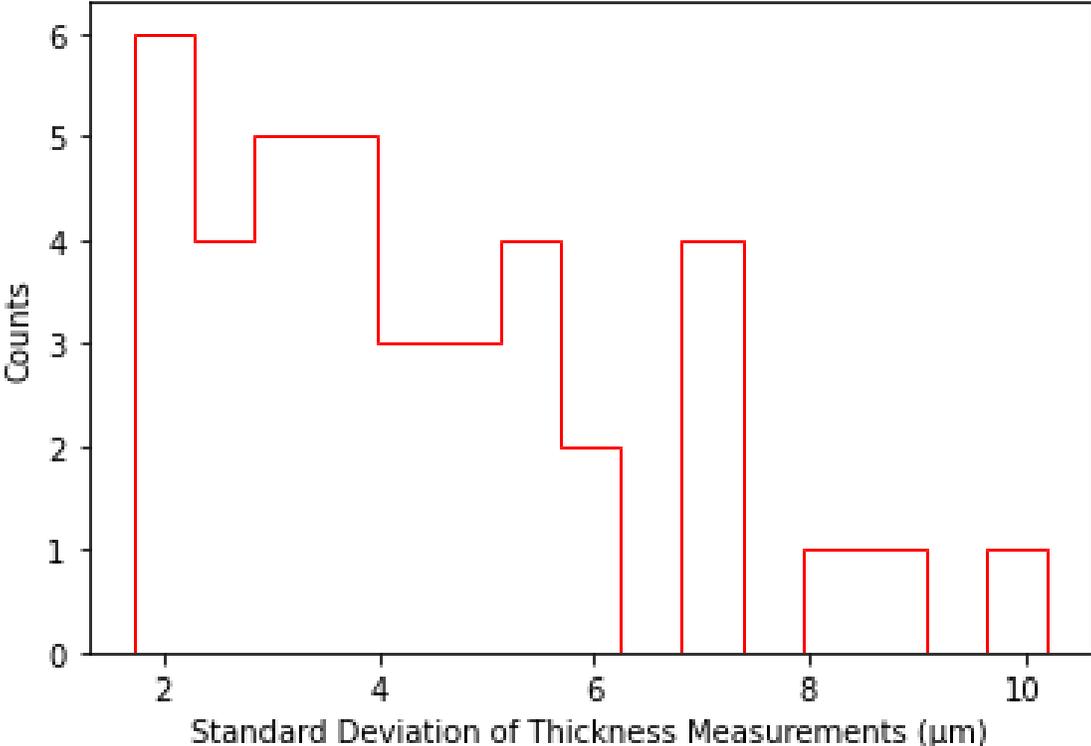


Combining the two batches...

A Histogram of Averaged Thicknesses of Culture Dishes



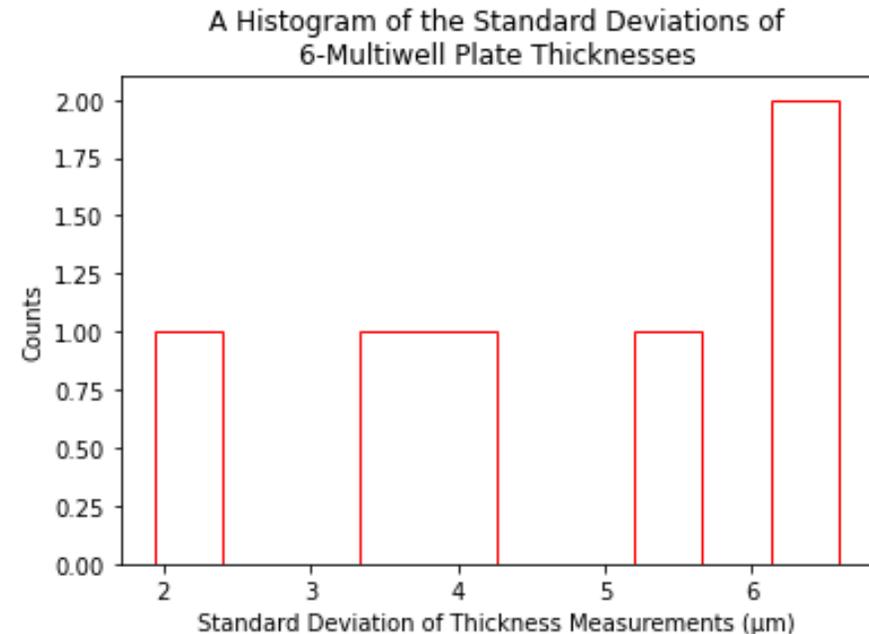
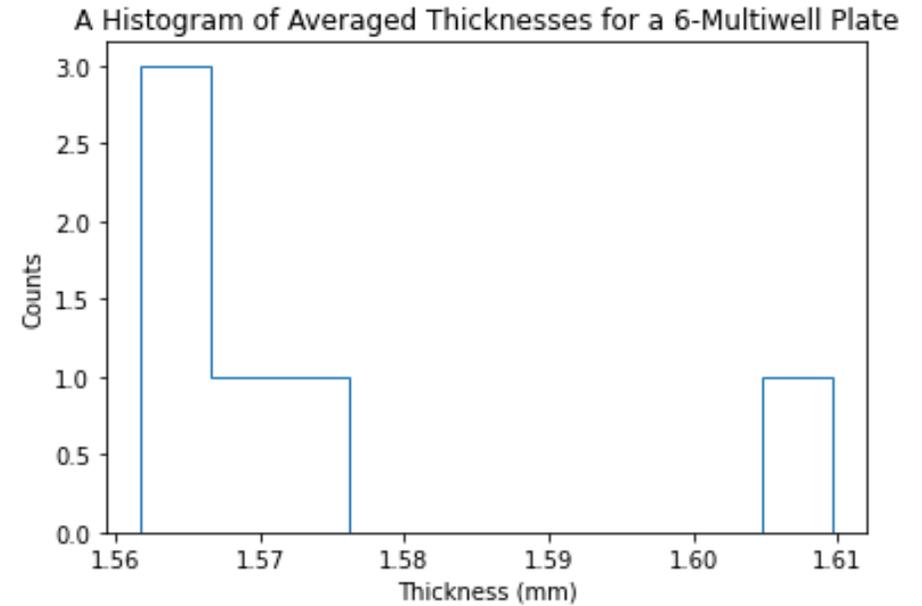
A Histogram of the Standard Deviations of Culture Dish Thicknesses



Additional Work: 6-Multiwell Plate



- A similar measurement was made of a 6-multiwell plate
- Like the individual culture dishes, each well by itself was reasonably uniform. The highest standard deviation was $6.591\mu\text{m}$ (4 s.f.).
- However, again there were differences in the average thicknesses between wells.
- Only one plate was measured so there are limited statistics.



Additional Work: 96-Multiwell Plate

- Measurements were also made of a 96-Multiwell Plate. 42 wells were measured, each one only once due to their small size.
- A much larger variation was observed between wells in this plate compared to the others.
- A micrometer is less reliable for these measurements due to its size compared to the wells, so an alternate measurement method is recommended for the future. These results are less reliable.



A Histogram of Thicknesses taken from a 96-Multiwell Plate

