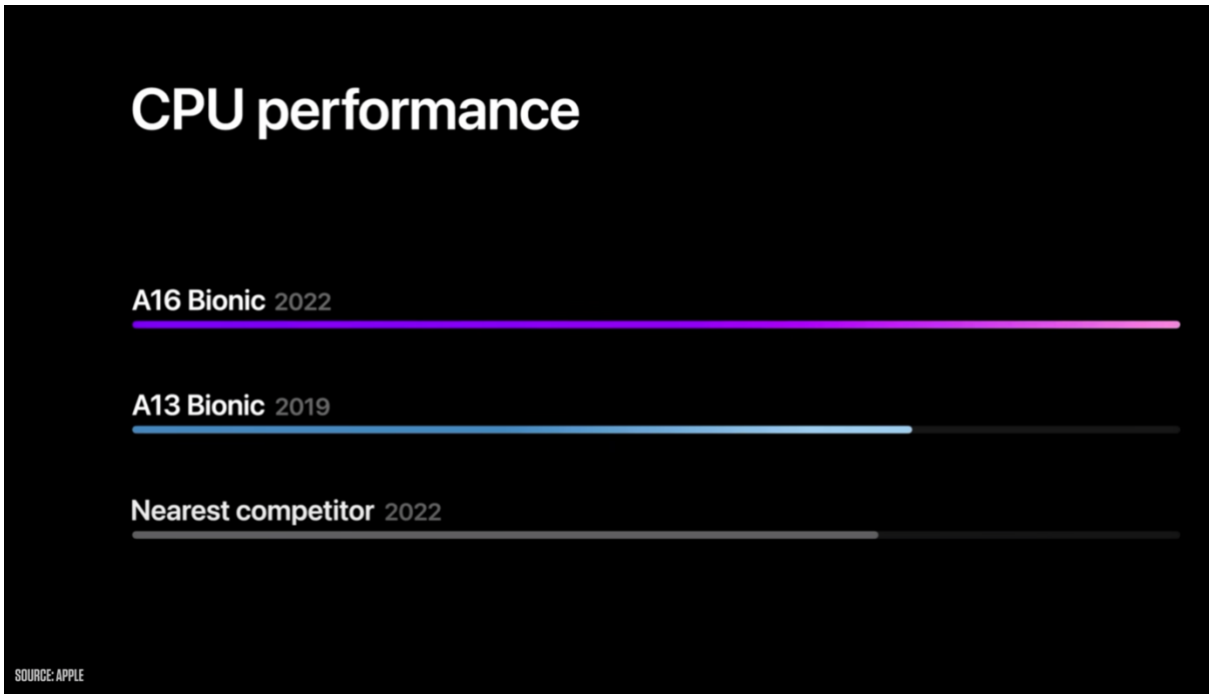
Apple's Comparison of A16 Bionic Processor

Introduction:

Apple held their fall keynote event on September 7, 2022 and had a pretty interesting lineup where they unveiled new iPhone lineup: iPhone 14 and their plus and pro, pro max variants. Although pretty exciting and touching Apple's ever "novelty" selling point, there was something off about them showcasing their new chipset. This paper talks about shortcomings on a visualization which looks completely fine but hides some vital information which would actually change the perception of a user and would challenge the context of the key highlight.

The Visualization:

Before we dive deep into our problem statement, Lets learn a little about A16 Chipset, As quoted by Apple's spokesperson "Joz", A16 is the most powerful chipset yet produced by Apple housing nearly 16 billion transistors built in a 4-Nanometer Process enabling faster performance at a greater efficiency [1]. Please take a quick look at the visualization shown by Apple showcasing their comparisons with other processors. [Ref. Fig 1]



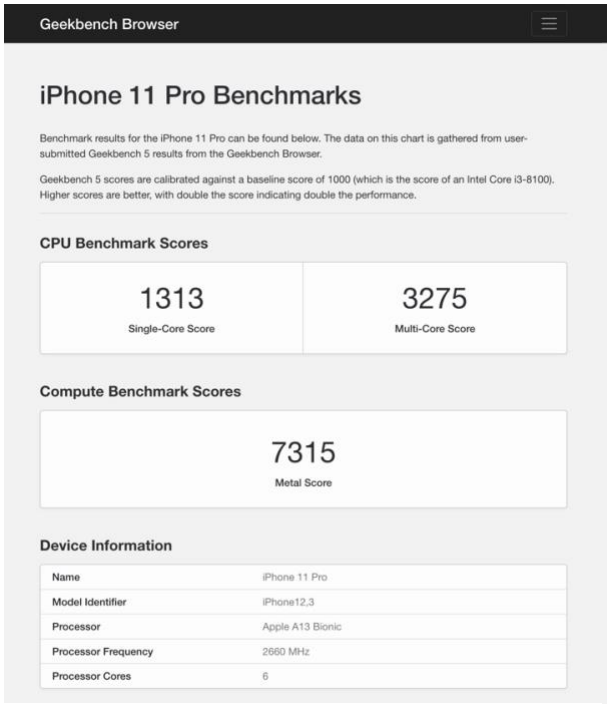
[Fig 1]

The Problem:

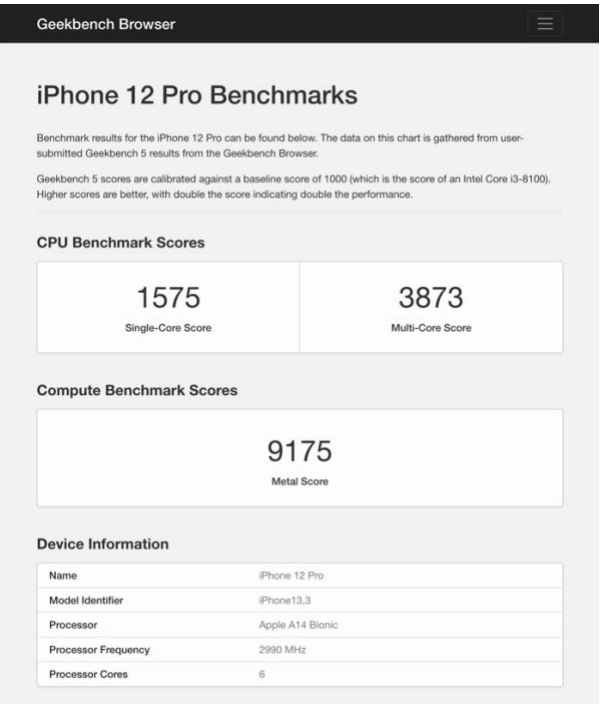
To give a context on the above figure, Joz starts off by stating that "The competition is still working to catch up with the performance of A13, introduced 3 years ago with their iPhone 11" [2]. So, they're starting a baseline for comparison of A16 with their A13 chipset as opposed to the A15 which happens to be the immediate predecessor. For the purpose of this case study, we will be using "Geekbench" [3] scoring matrix which rates processor performances.

The Observation:

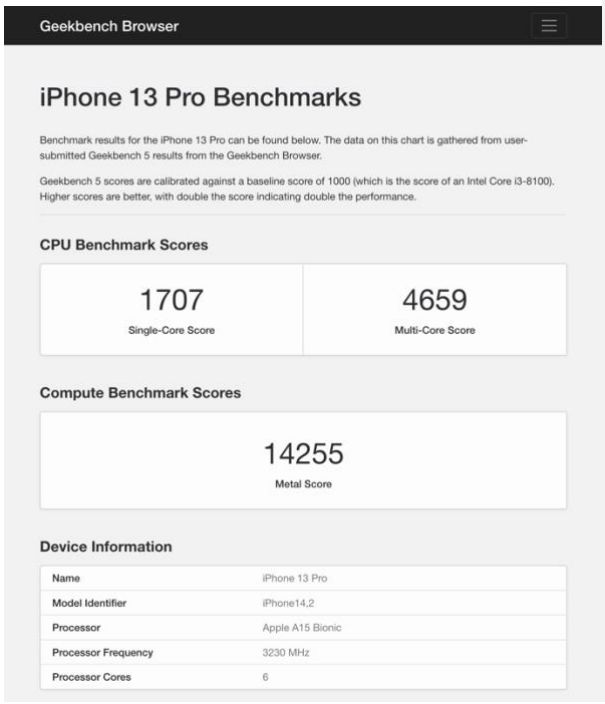
Please refer below figures showcasing side by side comparisons of A13 through A16 processors. We're focusing on just Pro models for this study.



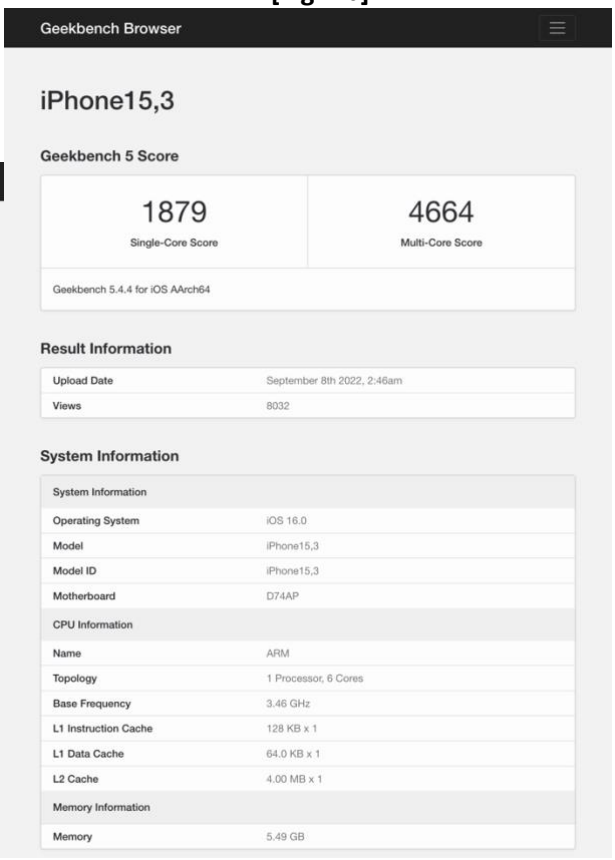
[Fig 2.a]



[Fig 2.b]



[Fig 2.c]

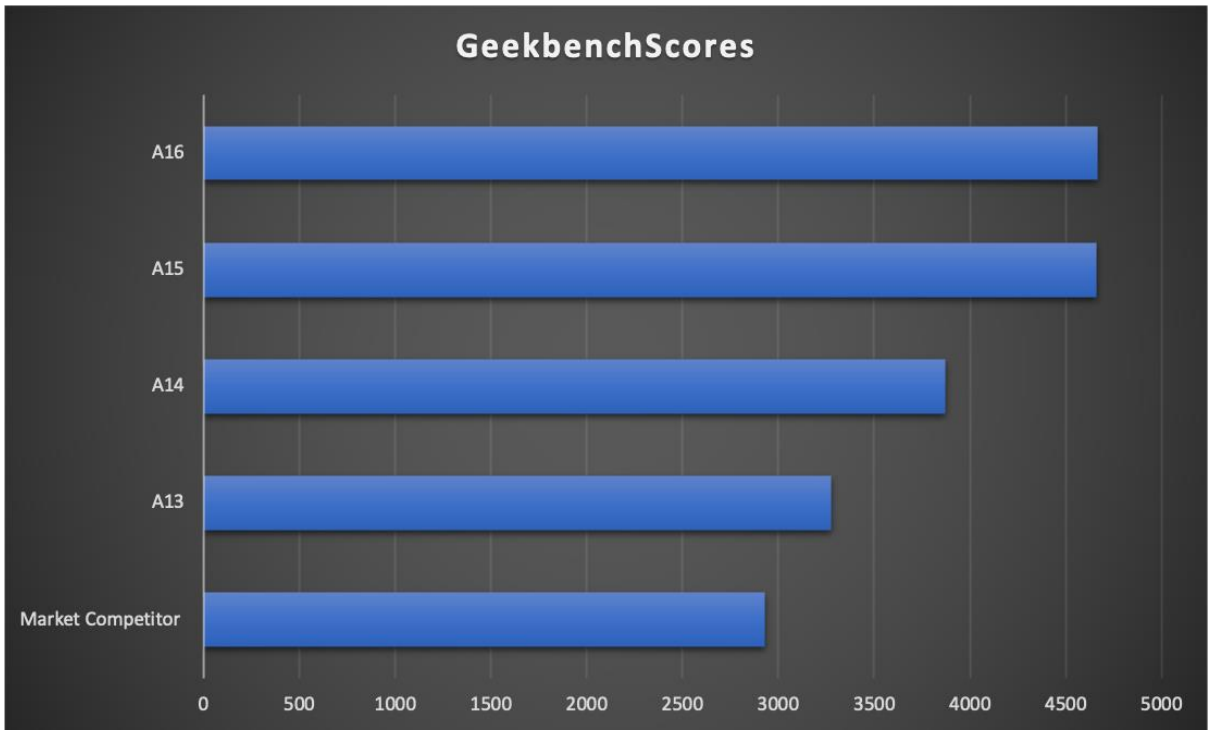


[Fig 2.d]

As you can concur from the pictures, there is a substantial difference of close to 600 points between iPhone 11 Pro [Fig 2.a] housing A13 Chipset and iPhone 12 Pro [Fig 2.b] housing A14 chipset for them being a generation apart. Similarly, there's a major jump of approx. 790 points between iPhone 12 Pro and iPhone 13 Pro [Fig 2.c] housing A15 chipset. But if you were to compare the A15 Chipset of iPhone 13 Pro with A16 Chipset of iPhone 14 Pro [Fig 2.d][4], you could only see a mere jump of 5 points, which to be fair, wouldn't excite an audience of this size across the globe.

The Fix:

For the fix, we can plot a graph where we align all the benchmark scores of chipsets from A13 through the current gen A16 and for the "Market Competitor" we'll select scores of Samsung S22 Ultra [5] the next best android alternate in a somewhat similar price range. So as to better depict a clearer picture and give a better perspective.



[Fig 3]

From the above picture we can clearly see that A15 and A16 look practically similar when plotted together in a graph.

The Conclusion:

We can conclude from the above-mentioned information that Apple skipped on mentioning/comparing their latest chipset with their immediate predecessor [A15] as there was not a significant jump on the bench scores. However, the iPhone 14 Pro is housing a lot of new Hardware and Software upgrades and their integration with the system and despite all these new inclusions they're still (claiming) that they won't affect the current standards, but are promising to provide a better, efficient processing system. If they would've justified these arguments despite the minor bump in the scores, we believe the comparison with the 2 generation older system chipset could've been avoided.

References:

[1]: Apple Keynote Transcript from youtube stream: https://youtu.be/ux6zXguiqxM?t=4599
[2]: Apple Keynote Transcript from youtube stream: https://youtu.be/ux6zXguiqxM?t=4624
[3]: About Geekbench: https://browser.geekbench.com/
[4]: About iPhone 14Pro & Fig [2.d], Since these are test scores on the early stages for the device they are being recognized by the codename: https://www.techspot.com/news/95910-iphone-14-pro-geekbench-results-highlight-modest-a16.html
[5]: Market Competitor phone which goes neck to neck in performance with a flagship iPhone annually is a flagship phone from Samsung i.e., Galaxy S22 Ultra in this case and the geekbench scores for this device: https://browser.geekbench.com/android_devices/samsung-sm-s908b

Figures:

[Fig 1]: Sourced from Apple Keynote Event: https://youtu.be/ux6zXguiqxM?t=4624
[Fig 2.a]: https://browser.geekbench.com/ios_devices/iphone-11-pro
[Fig 2.b]: https://browser.geekbench.com/ios_devices/iphone-12-pro
[Fig 2.c]: https://browser.geekbench.com/ios_devices/iphone-13-pro
[Fig 2.d]: https://browser.geekbench.com/v5/cpu/17124579
[Fig 3]: Graph plotted using GeekBench Scores VS Chipset values to a horizontal bargraph.