

Morphological Analysis of Noise-Canceling Headphones

	Sony WH-1000XM5	Bose QuietComfort 45	Apple AirPods Max
Price	\$399.99	\$329	\$549
Colors	2	2	5
Weight	8.82 ounces	8.4 ounces	13.6 ounces
Battery Life	30 hr with ANC on (40 hr with ANC off)	24 hr with ANC on	21 hr with ANC on
Compatibility	Sony Headphones App	Bose Music App	Specific iphone, ipad, mac models
Controls	Touch, gestures, buttons	Touch, gestures, buttons	Digital crown, buttons, Siri
Charging Port	USB-C	USC-C	Lightning
Connectivity	Bluetooth 5.2	Bluetooth 5.1	Bluetooth 5.0
Microphone	8 (8 for ANC)	4	9 total (8 for ANC, 3 for voice pickup)

Conclusions:

1. Controls of these three headphones are similar, except Apple has Siri which doesn't require any physical touches.
2. Although Active Noise Canceling is the biggest selling point of all three headphones, there isn't a consistent or standardized way of measuring how well they are able to cancel noise, at least this information is not easily accessible to users.
3. Apple has a bigger focus on its ecosystem, as Apple AirPods Max can only be used with Apple devices and its charging port still uses the lightning port.
4. According to technical product reviews, Apple AirPods Max has the best transparency mode, which may be due to the number of microphones it has.
5. Sony XM5 has the best bluetooth connectivity technology, but this does not seem to be an important/decisive factor for choosing which one to buy.
6. Sony XM5 has the best overall review out of the three products, and it's mainly due to:
 - Lightweight so that people can wear it for a long period of time
 - Best noise canceling technology and cheaper than Apple AirPods Max

Analysis:

I chose these three products because they are all top-rated noise canceling headphones in the market right now. I was able to get a better understanding of which product has better noise canceling by reading product reviews where they directly compare noise canceling of popular headphones by recording sounds people could hear with the headphones with and without ANC (Active Noise Cancellation). However, on their product websites, they tend to use

vague terms such as “industry-leading noise canceling” but do not showcase why it is “industry-leading,” which could be frustrating and not helpful for potential customers. I also realized that for noise-canceling headphones, people always prefer lighter headphones and wearability has become increasingly important for wearable devices. Conducting morphological analysis on products is really helpful to me as a customer but also to designers and product managers, as this gives them a better sense of which direction they should go in to improve their products.