



Voice assistants... amazing and have lots of applications!



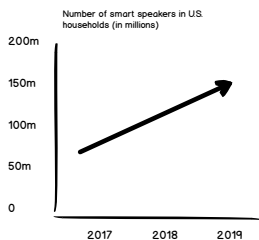
There were already automated voice systems for phone trees, etc., but Siri came out in 2010 and offered a whole new set of possibilities



2014-2015: Alexa is released in the US

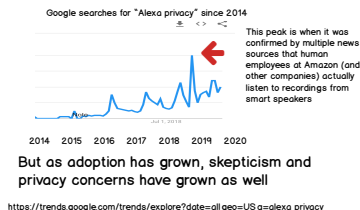


could also represent some of these important debuts on a timeline if that would be interesting



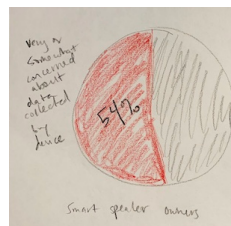
Other smart speakers follow, and adoption increases significantly each year: clearly plenty of people think these are useful!

Source: NPR Smart Audio Report Winter 2019



But as adoption has grown, skepticism and privacy concerns have grown as well

<https://trends.google.com/trends/explore?date=all&geo=US&q=alexa+privacy>

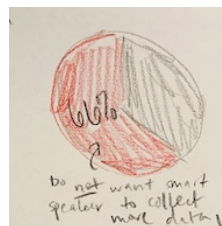


Even among those who have smart speakers, many are concerned about the data those devices are collecting

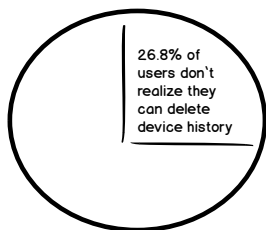
In 2019, news reports have revealed that employees or contractors can listen directly to recordings from these devices, essentially for "quality control" purposes & to improve their voice recognition tech (Will add some links to relevant stories here)



Currently, we don't have much data about how consumers feel about this, but this seems to be worth investigating given what we do know about users' opinions about tech company data collection overall



For example, we know from Pew data that 2/3 of users of smart speakers don't want the speaker to collect more data, even if it would provide better personalized services



We also don't have a great deal of data about whether users feel like they understand the settings on these devices and can control their privacy. Pew data indicates, however, that about a quarter of people who use smart speakers such as Alexa devices don't even realize that their devices have a log that you can delete history from



	Amazon Alexa/Echo		Google Home	
	Understands?	Meaningful answer?	Understands?	Meaningful answer?
"Tell me about your privacy settings"	✗	✗	✓	Gives URL
"Change my privacy settings"	✓	"Go to app"	✓	Gives URL
"Read me your privacy policy"	✓	"Go to app"	✓	Gives URL
"Who can listen to recordings?"	✗	✗	✗	✗
"Can people/employees listen to my recordings?"	✗	✗	✗	✗

One possible reason for this is that these devices currently don't offer much control via the device itself: most of the time privacy information and settings seem to only be available via the company's website or the corresponding smartphone app (Source: transcripts of my own interactions with these devices)

Changing settings for recordings for Amazon, Google, or Apple smart speakers is generally pretty difficult—but Apple is the only one that doesn't save recordings by default



Final takeaway: We know that consumers are adopting smart speakers more and more.

We don't have enough data to really know if they are comfortable with the data these devices collect or if they feel like they have enough control.

In particular, we don't know if they are getting privacy information and controls via the method that would be most useful or in language that they can understand.

More research is needed!

We know that it sometimes takes a lot of steps to find the settings that control this, that Google and Amazon save recordings by default, and that the privacy information available about recordings is sometimes in pretty complex language (Source: data/text that I collected directly from the apps for these devices, plus readability statistics on that text from <https://www.webfx.com/tools/read-able/check.php>)

