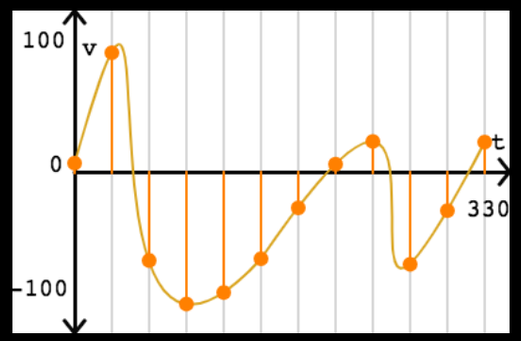
Data

Analog vs. Digital

- Analog data has values that change continuously, smoothly, over time.
- Analog data can be converted to digital data, but the methods used are *lossy* based on how the analog data is *sampled*.



Digital data, for example, is a text file, or any file stored on a computer – as it will be represented by 1's and 0's, encoded in binary.
Analog data – older telephone systems where the people speaking are directly connected by a copper wire. Tape recorders, record players. Data is represented by smooth, continuous increases or decreases in voltage.
In the diagram above, the light orange curve represents analog data. The light orange vertical lines represent a smaller collection of *samples*.
Analog to digital conversions are *lossy* – some of the original data is discarded to create a smaller file.

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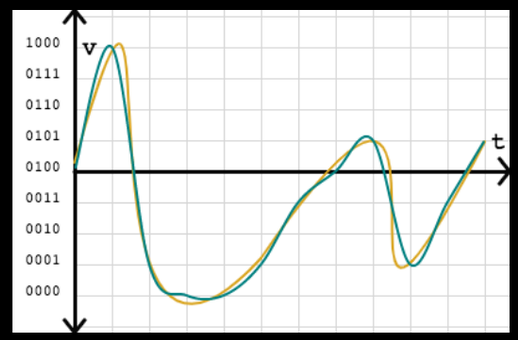
Analog vs. Digital

- Digital data can be converted back into analog data (varying levels of voltage for an electrical signal).
  - However, the re-created analog signal is not the same as the original.



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Be sure to click the image on this slide to watch a short video on this topic.

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Analog vs. Digital

- Deep dive, optional reading:
  - Spotify vs CD vs Tidal: Is the debate over hi-res audio still relevant?
  - Was the Pono Predestined to Fail?
  - Why People Should Take Neil Young's Subscription Success More Seriously

Data

Analog vs. Digital

- Dive in:
  - Khan Academy has a really nice interactive page where you can experiment with sampling and analog to digital conversion.
    - Please try that out, then try the related quiz after reading through that section.