

Audio Formats: Care and Handling

Digital Stewardship Curriculum

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- What kind of audio formats are in your collection?
 - What media types do you have experience with?

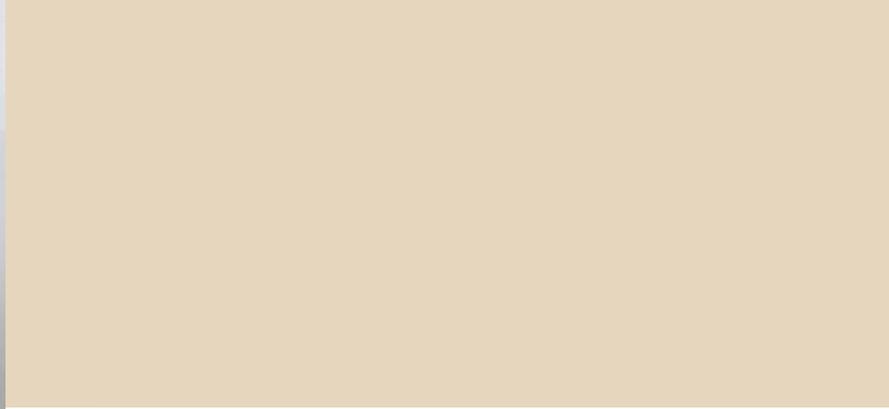
Analog Audio Formats

- **Magnetic Audiotape**
 - Cassettes, Open Reel
- **Grooved Media**
 - Records, Wax Cylinders
- **Optical Media**
 - CDs

Magnetic Media

- Open reel, Cassettes, Digital Audio Tape, Wire Recordings
- Composed of a base, binder and metal particles that hold the sound recording





Magnetic Media Preservation

- Lack of (working) playback equipment
- Brittleness, physical damage
- Demagnetization over time
- Mold
- Substrate and recording media delamination

Grooved Media

- Wax Cylinders
- Discs
 - Vinyl
 - Shellac
 - Acetate (metal or glass)





Grooved Media Preservation

- Lack of (working) playback equipment
- Playback wears out the recordings
- Wax Cylinders
 - Very fragile
- Discs
 - Fairly fragile
 - Delamination

Optical Media

- Minidisc
- CD



Optical Media Preservation

- Lack of (working) playback equipment
- Physical damage
 - Scratching
 - Corrosion
 - Delamination
- Spontaneous Failure

Care and Handling, Storage of Analog

- Don't touch the recording media
 - Handle discs by edges
- Store in cool, dry, dark place
- Handle with clean hands (or gloves)
- Store media on-edge/upright
- Use acid-free/archival cases to store
 - Re-house if necessary
 - Use the right size cases

Resources for Identification

Quick Guide in packets

[PSAP](#)

[Museum of Obsolete Media](#)

[Field Audio Collection Evaluation Tool \(FACET\)](#)

Library of Congress

[Connecting to Collections](#)

Analog to Digital Conversion

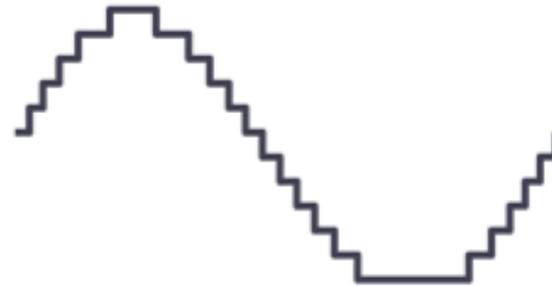
Analog and Digital Signals



ORIGINAL SOUND WAVE

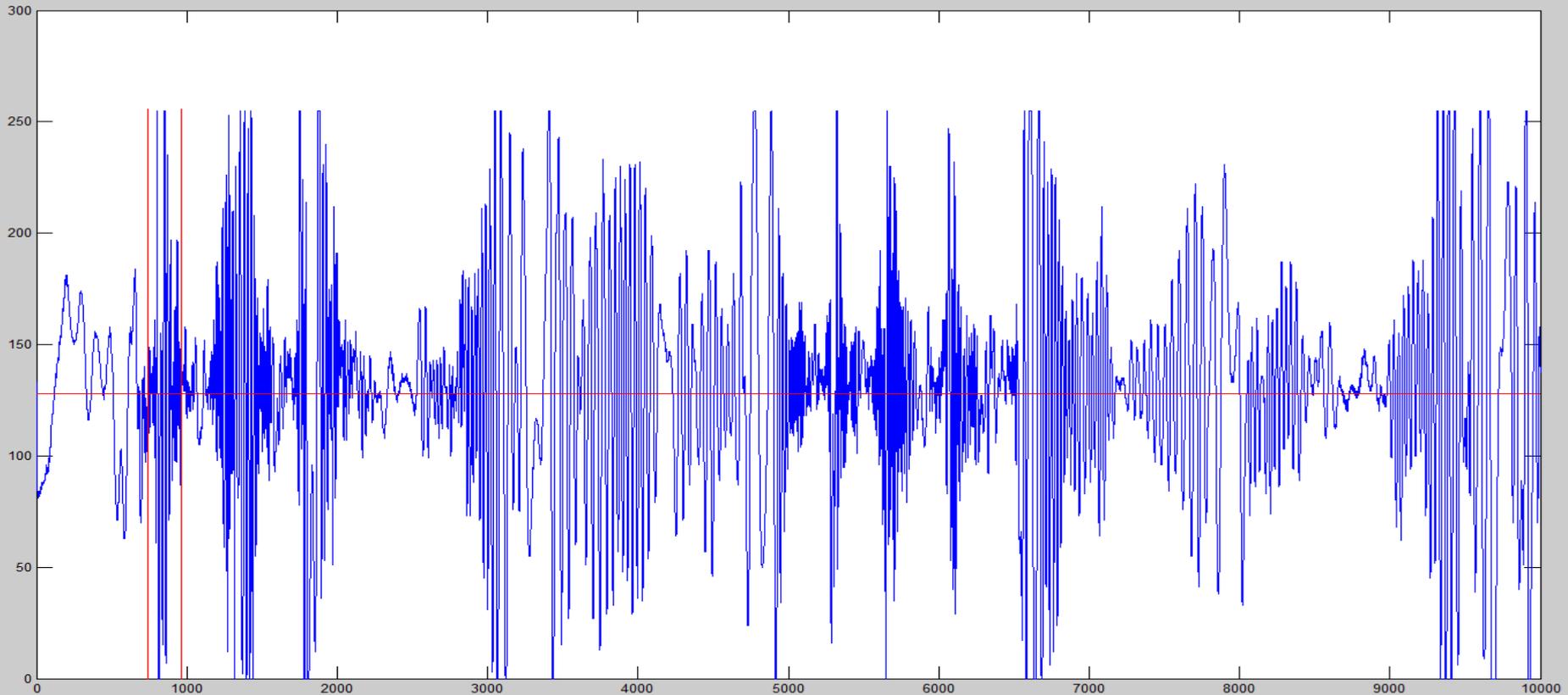


ANALOG SOUND WAVE

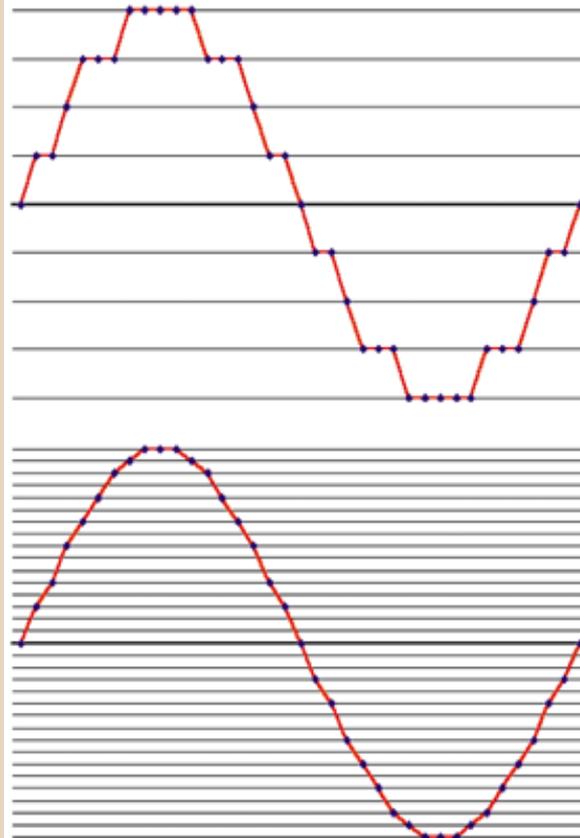
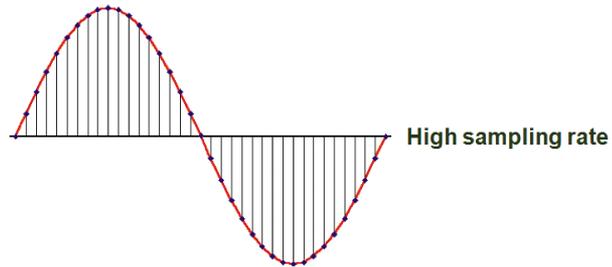
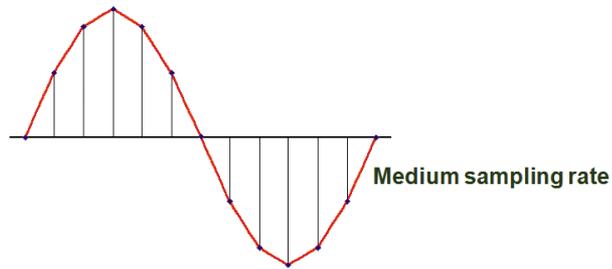
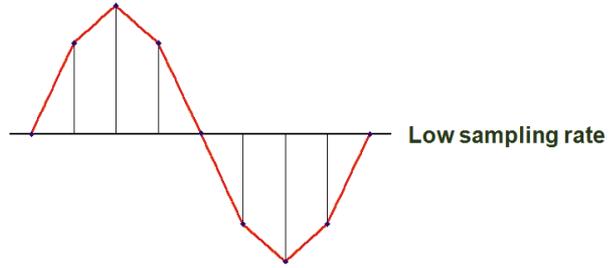


DIGITAL SOUND WAVE

Analog and Digital Signals



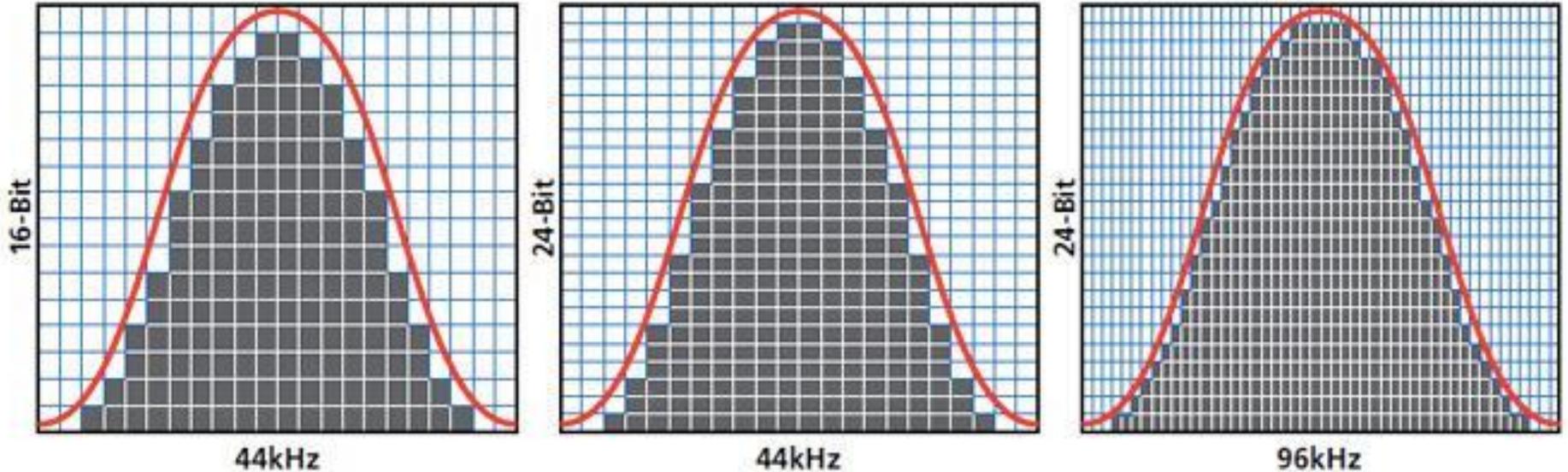
Analog and Digital Signals



Low sample resolution

High sample resolution

Analog and Digital Signals



As Bit depth and sample rate increase, more information is captured, this resulting in higher quality audio.

Digital File Formats

Recommendation Level	File Format	Sample Rate	File Bit-depth	Usage Example
Minimum	WAV/AIFF	44,100	16	Audio from commercial CD
Special Consideration	WAV/AIFF	48,000	24	Human voice only, no instrumental music
<i>Recommended</i>	<i>WAV/AIFF</i>	<i>96,000</i>	<i>24</i>	<i>Oral History recording, especially if there is music. Natural sounds or sounds from nature.</i>

Recommendation Level	File Format	Bit Rate	Usage Example
Minimum	MP3	128 Kbps	Oral history, without music
<i>Recommended</i>	<i>MP3</i>	<i>192 Kbps</i>	<i>Most audio</i>
Special	MP3	320 Kbps	Very high fidelity required

Digital File Formats

- **WAV** for Preservation
 - Sample rate: 48 or 96 kHz
 - Bit depth: 24 bits
 - 1-2 GB/hr
- **MP3** for Access
 - Bit rate: 192 Kbps
 - 86 MB/hr

Digital Storage

- 3-2-1!
 - At least 3 copies, on at least 2 different storage media, 1 of which is in a different geographic threat region