Introduction to Recording and Editing Podcasts with Audacity

Digital Integration Teaching Initiative

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ENGW3307 Advanced Writing in the Sciences

Professor Bunting

Summer 2025, June 4th

Feel free to ask questions at any point during the presentation!

Workshop Objectives

- Consider podcasting as a mode of presenting scientific information
- Understand best practices for audio recording and editing
- Explore Audacity as a podcast editing tool
- Learn how to:
  - Record and clip audio
  - Add/move/delete tracks
  - Add sound effects and/or background music
  - Save and export projects
- Link to module materials: https://bit.ly/SU25-Bunting-Audacity

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Podcast Anatomy

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Podcasts as a mode of presentation

- Podcasts as a medium are well suited to communicate complex scientific ideas to wider audiences
- From a study of science podcasts series from 2004 to 2018, 65% were hosted by scientists and 77% were targeted to public audiences
- The study found that: “Since 2004, podcasts have emerged as a decentralized medium for science communication to the global public”

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Podcasts as presentation (Cont'd.)

- What are some benefits to the science community of using podcasts to spread information?
- How can podcasts as a medium be designed to meet this goal?
- What did you notice from the podcasts you listened to for class? Which were your favorites and why?

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Podcasts

- Podcasts typically begin with an **opening segment** of 10–30 seconds of music and audio wherein the creator identifies the **podcast title**, **host**, and **episode topic**.
- This creates a trademark/signature and indicates to the listener that the podcast is about to begin.
- **Be as creative as you want!**

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Podcast Anatomy: Intro/Opening Segment

- Intros/Opening segments are listeners' **first impressions** of a podcast. From the opening segment, listeners make assumptions about the podcast's **Audience, Genre, Style**, and overall **Structure.**
- The podcast's opening segment must accomplish several goals:
  - **Setting the tone:** several successful podcasts set the tone using media (e.g., theme song music, sound effects, archival audio clips).
  - **Identifying an audience:** Acknowledging and drawing in people who might be interested.
  - **Establishing listener expectations:** Explaining the goal and theme of the podcast.

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Opening Segment Example

Listen to the opening segment to "Bad Blood, Bad Science" (through 0:31) from Alexis Pedrick's *Innate: How Science Invented the Myth of Race,* a podcast that "explores the historical roots and persistent legacies of racism in American science and medicine."

Questions to keep in mind:

- What audio techniques do they use to engage their audience?
- How do they introduce their topic?
- What aspects did you like and might incorporate in your project?

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Podcast Anatomy: The Body

- Your podcast should have an **argument** or **perspective**, not just a recitation of facts. Try to keep your tone **persuasive** and **conversational**. Like any good piece of reporting, your podcast should be **organized** and rehearsed ahead of time.
- Do your research and have your script written **before** you start recording; know how your show is laid out and how much time you have.
- Mark out spaces in the script for pauses, sound clips/effects, transitions between topics, etc.

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Podcast Anatomy: The Outro

Podcasts typically end with a **closing segment** of 10–30 seconds of music and audio providing the **creator(s)**, **institutional affiliation**, and **audio/production credits,** and **acknowledging** those whose work or advice has significantly influenced or contributed to the episode.

An outro script for a class might sound something like “This podcast was made by [student name]...opening music created by [artist name], sound effects taken from [repository name]... with special thanks to [name] for their contribution.” It may also include outro music.

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Outro Example

Now listen to the concluding segment to "Science, Interrupted: Part 1" (from 40:40 onward) from the *Distillations* podcast, an episode about ramifications of genetic engineering. Compare the techniques used in the outro to the intro segment from “Bad Blood, Bad Science.”

- Compared to the intro example, what do you notice has changed or remained the same?
- What decisions were made to keep the audience engaged?
- How does tone of the content interact with the audio chosen?
- What techniques will you consider emulating for your project?

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Best Practices for Podcasting

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General Best Practices

- **Test your mic** and technology before you start.
  - Record some test audio and play it back before you begin.
- **Have a plan** for the conversation and transitions.
  - Give yourself a script. As you record, mark out spaces for transitions in the recording (topic-to-topic, parts of the episode).
- **Prepare phonetic pronunciations** for names or jargon and write out long numbers in full (e.g., "twelve thousand, four hundred and two" vs "12,402")
- Include **transcripts for accessibility** (use software like Otter AI).
- Use **open access media/music** (BBC Sound Effects, Incompetech, YouTube).

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Getting Started: Tips for Recording Audio

- Record test audio and adjust mic volume if necessary.
- Record a few seconds of silence at the start and end of each track
- Begin way in advance, and do several takes.
  - Editing often takes much longer than the recording itself!
- Speak slowly, clearly, and conversationally.
  - If you use too many “filler words” (um, like, so) you can always edit them out later. Stop recording and start again at the top of the sentence to avoid jarring sound cuts in post-production.

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Environmental Considerations

- Ideally, find a room with good sound absorption to prevent echoing.
  - **Yes:** carpet, cushions, bookshelves, clothes (bedrooms, closets).
  - **No:** larger spaces with hard, smooth surfaces (kitchens, bathrooms).
- Put some **distance** between yourself and the microphone (depending on your equipment).
  - Being too close can make the audio too loud or garbled sounding. If you are positioned too far away, the audio will be too quiet or too muffled to salvage.
  - Know where your microphone is located and keep it clear of papers/other objects.

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Environmental Considerations cont'd.

- Use headphones when recording and editing.
  - After you finish editing, listen to the file without headphones to see where the audio is too loud/quiet when played in a space.
- Take ambient noise into consideration.
  - A/C units, refrigerators, traffic, pets, roommates, loud clothing, etc.
- Stay hydrated!
  - Keep a drink nearby (water, juice, etc.) to soothe your throat and keep it relaxed.

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Recording Considerations for Interviews

- **Remote recording** (via Skype, Zoom).
  - If you record via Zoom, **save your recording to your computer,** not the cloud.
- **Ease into the interview** with low-stakes conversation
  - Interviews are like playing catch. Start with questions that allow everyone to get comfortable. Be yourself!
- **Don't rush,** and know you can start over
  - You don't need to get everything in a single take, and you won't use all the audio that you record. So don't be afraid to pause frequently and remember you can start over (or cut something altogether!)

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Making Podcasts: Audacity

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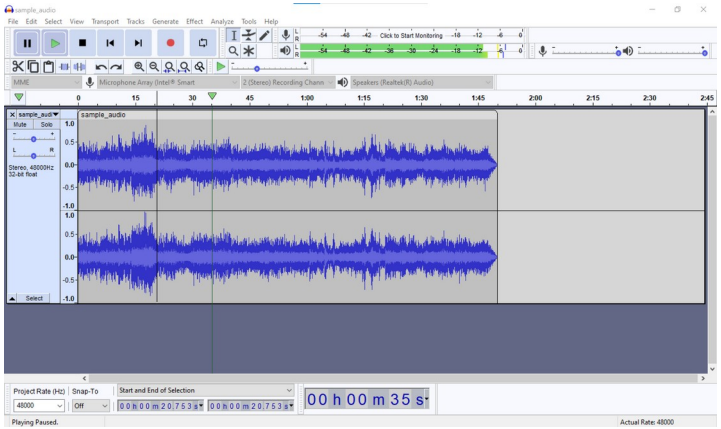
What is Audacity?

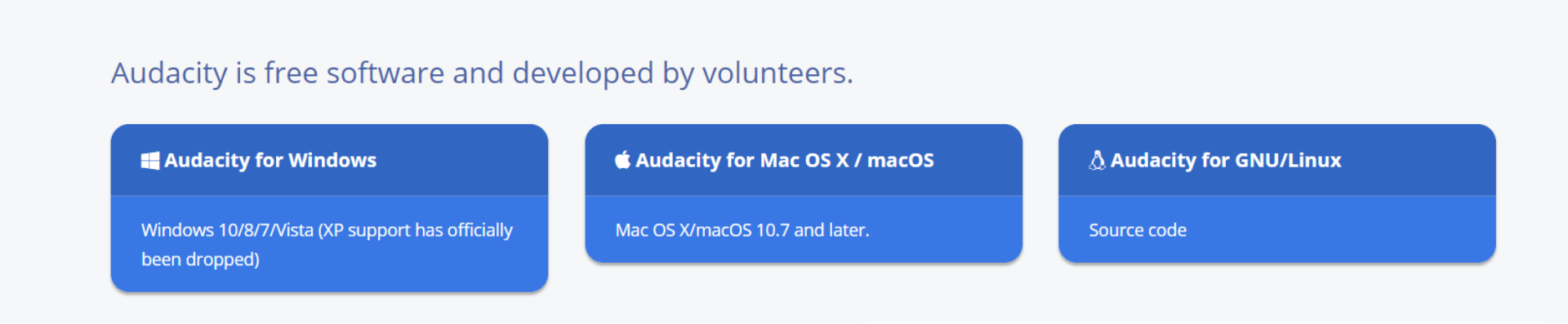
Audacity is a free **multi-track** audio editor and one of the more popular free audio editors used for creating podcasts.



Multi-track: the ability to have different layers of audio in one clip.

Downloading Audacity

https://www.audacityteam.org/ —Audacity is platform-agnostic!



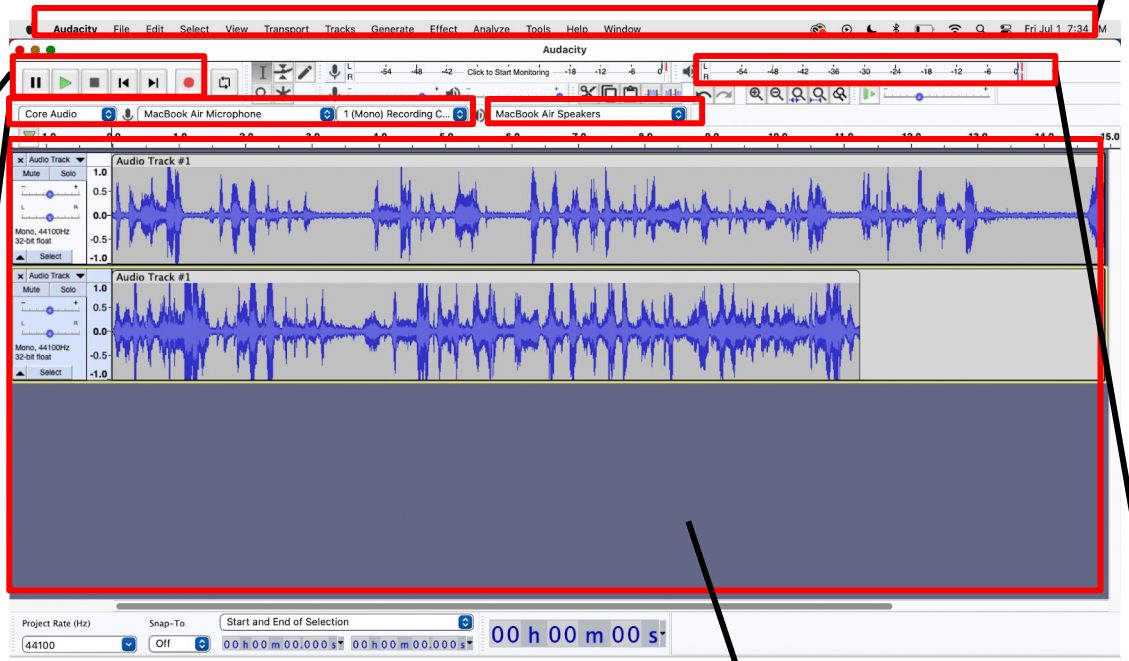
For PC users: download **Windows Install**

For Mac users: download **MacOS.dmg**

Anatomy of Audacity

Main buttons (L-R): pause, play, stop, fast-forward/ backward, record

Microphone, volume, input, and output



Editing, saving, effects, transporting or exporting recording

Output Volume Level Monitor (*Tip: try for -12 to -6db)*

Recordings (audio tracks) will display here

https://manual.audacityteam.org/

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Key Terms

- **Track:** a single audio channel or stream.
  - **Multi-track**: an audio recording or chanel with more than one track or recording of sound.
- **Clip**: a section of audio, often made with the **split** tool.
- **Waveform:** the curve within a track showing the duration and volume of individual sounds.
- **Mixing**: the process of audio production, or mixing tracks of recordings, music, and other desired media.
- **MP3 File:** the most generally used audio file format. Others include .wav and .mp4.

Basics: Audacity & Recording Audio

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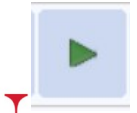
Recording

Make sure your **microphone** is working by checking to see that it is selected in the microphone section of the screen. Each computer will have different microphones, so check your sound settings for your model.

To **record**, click the button with the **red circle.**

Hit the **pause** button to pause a recording.

Hit the **stop** button to stop recording.



Use **re-play** to verify the recording quality/ volume

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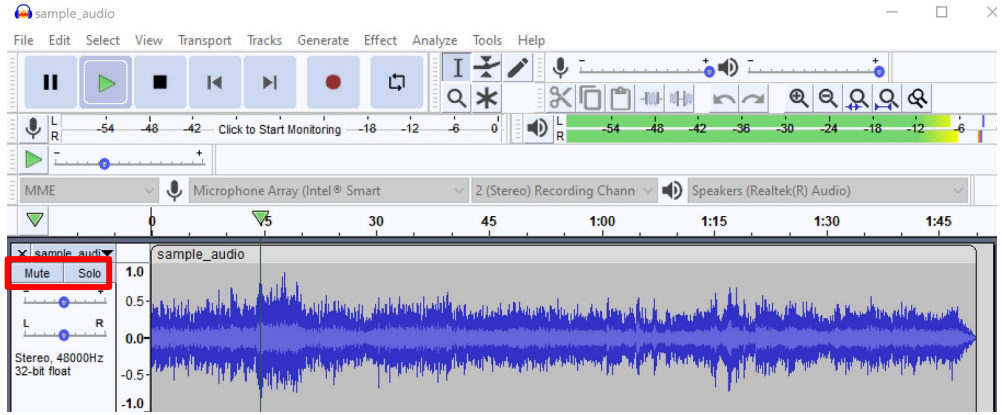
Checking volume

Keep an eye on the **monitor** when recording and playing back your audio —try to keep it in the **green** (literally).



If your volume is too loud, the monitor levels will turn yellow and red (blown-out effect when played back.)

If one of your tracks is louder or softer than the others, adjust the volume on each track. **Tip:** to hear one track without the others, **mute** the other tracks or click "**solo.**"

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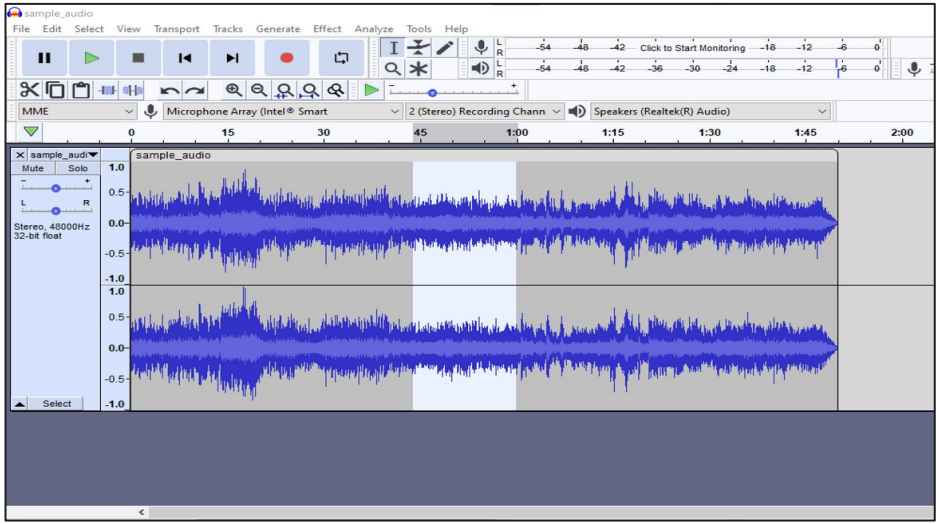
Moving Tracks

To move entire tracks or audio around in Audacity, you can click and drag them by hovering your mouse over the top of the clip.



Click whatever clip or track you want to move and drag it into position.

Basics: Audacity & Editing Audio

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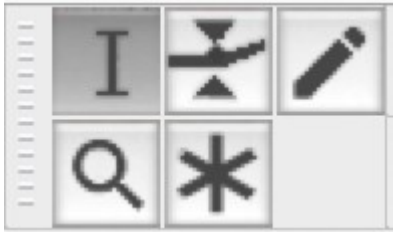
The Audacity Toolbar

- I The **selection tool** will be selected automatically when you open Audacity.
- ✱ The most useful tool is the **multitool**, which allows you to use all the functions of the other tools without switching to them.
  - The selection tool function is the default.
  - Hover over the waveform borders to use the envelope tool function.
  - Use your trackpad to zoom.
  - Zoom in and click to use the draw tool function.

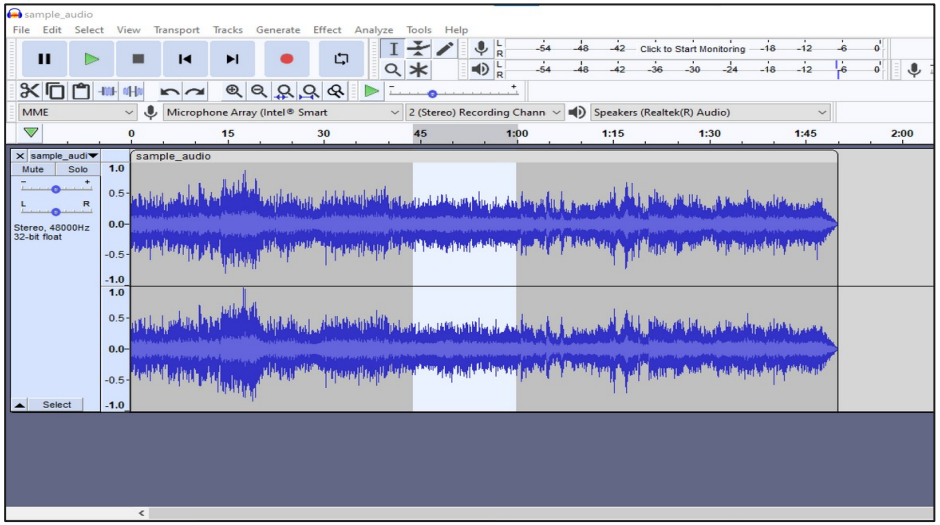


The Audacity Toolbar (Cont'd.)

- The **envelope tool** allows you to smooth changes in volume by using control points at the top and bottom of the waveform.
  - Clicking on the blue border will create control points, which you can then move around to adjust the waveform envelope.
- The **zoom tool** lets you zoom in and out of the waveform in order to make adjustments.
- The **draw tool** allows you to manually redraw the waveform to change the volume or correct background noise.
  - You can only use the draw tool if you've zoomed into the waveform.

Removing Parts of Tracks

Once you have recorded audio in Audacity, you can easily edit it. Here is how to remove sections using the **Selection Tool (F1)**:



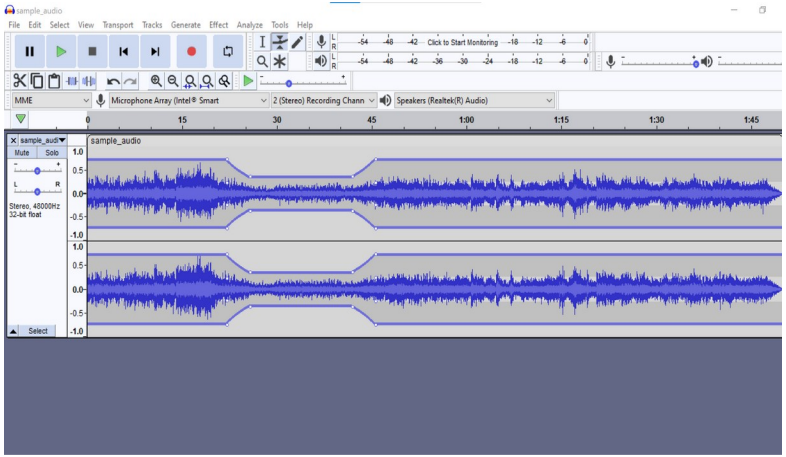
Click and drag with your cursor to select the portion your wish to remove.

Then, hit backspace or delete on your keyboard.

Tip: you can zoom in and out with the **Zoom Tool (F4)** to better see what you're trying to delete.

Fading In/Out

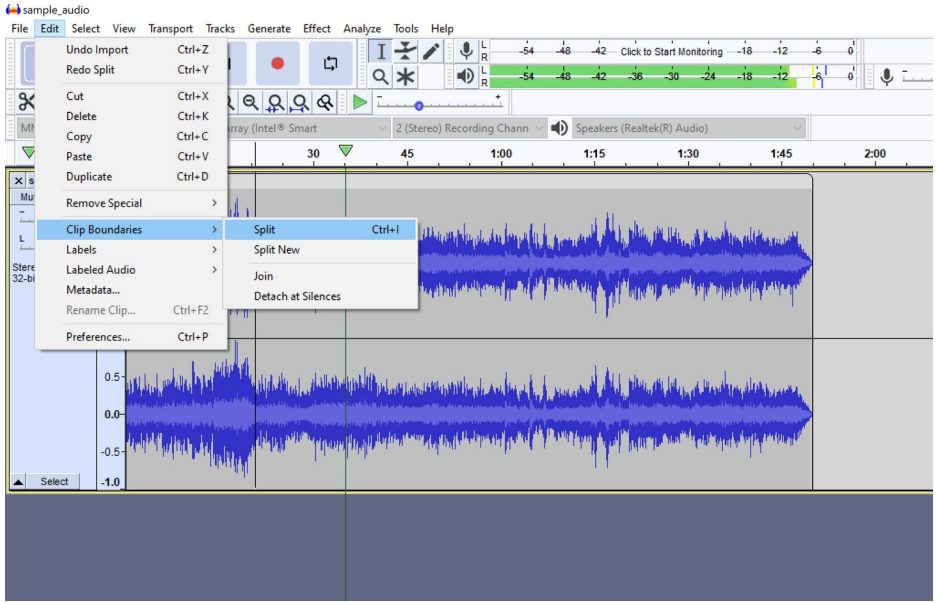
To fade music in and out on Audacity, use the **Envelope Tool (F2)**. Two yellow bars will show up on each track.



- Click to add **control points** (little white dots) on the track you want to fade in.
- Drag and move the nodes to up and down and side to side to change the volume and how gradual the volume fade is.
- Add and adjust nodes at the end of the track to fade the music back in.

Splitting Tracks

To split a track in Audacity, follow these steps to make shorter clips:

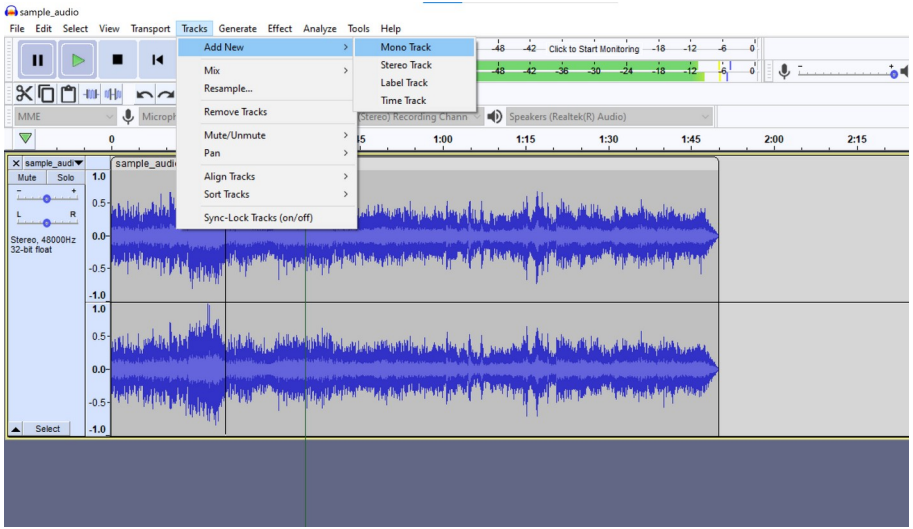


With the **Selection Tool (F1)**, place your cursor over the section where you want to split your track.

Navigate to the **Edit** section, click under “**Clip Boundaries**” and select “**Split,**” or press **Ctrl+I**.

Adding Tracks

To create additional tracks in Audacity for a **new recording**, hit the record button and it will start a new track. Another option is:



Navigate to the “Tracks” menu option and select “Add New.” This will open a list of options. Select the “Mono Track” option. You can also add a new mono track by pressing **Ctrl+Shift+N**.

Your Turn!

- Visit one of the following:
  - BBC Sound Effects and click on ‘Browse All’
  - incompetech.com and click on ‘Royalty Free Music’
  - studio.youtube.com and click on the ‘Audio Library’ tab
    - (you have to be signed into Google for this one)
- Download something you want to play around with and try to:
  - **Remove** some of your track.
  - Choose a part to **fade in** or **fade out.**
  - **Split the track** into multiple.
  - **Add a new track** to your project.

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Saving, Exporting, and Sharing

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Saving

Audacity does not auto-save! Save your recording, early and often!

Try and save after each major edit/input of a recording, just to be safe.

Save in multiple places. Always have backup.

File > Save Project > Save Project As> "Name of your podcast"

And once your project is saved...

File > Save Project > Save Project > [saves the updates to your file]

About File Formats

- **Lossless Audio File Formats:** better than or equal to CD-quality.
  - **WAV:** uncompressed file, meaning huge file size. Best for editing raw audio files in Audacity.
  - **AIFF**: Apple's alternative to WAV. Uncompressed, not widely used.
- ***MP3/MP4:** compressed audio file, ensures small file size. Best for exporting and distributing from Audacity.
- **Ogg Vorbis**: Open-source alternative to MP3. Used in Spotify streaming.

**Note: The DITI typically recommends you save files as mp3 (sometimes mp4, if you use a PC).*

Exporting and Sharing

Finished with your recording?

- Make sure you **<u>export</u> your project as an MP3** before you share it!
- This will ensure that other people are able to listen to your project. Exporting to an MP3 will ensure that anyone–even people who don't have Audacity–can listen to your project file.

File > Export > Export as MP3

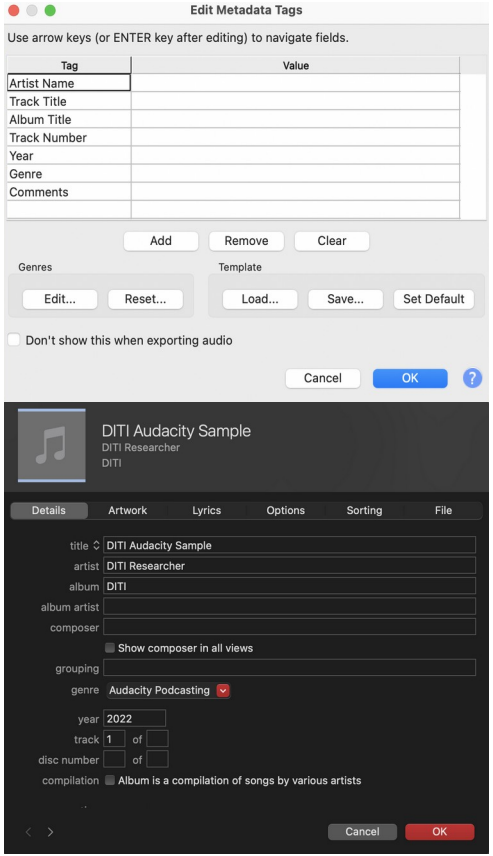
Select "best quality"

Exporting Metadata Tagging

When you export your file, Audacity will prompt you to add metadata tags to identify it.

On a Mac you can add artwork by importing your file to an Apple Music library, Control-clicking on it and choosing “Get info.”

On a PC, you can edit the MP3 metadata by clicking through to File Properties.



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For Further Exploration

DITI Handout on Audacity

DITI Handout on Copyright and Fair Use

DITI Handout on Accessibility

Northeastern Library Recording Studios

Northeastern Library Digital Media Toolkit

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Audacity Alternatives

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Audacity Alternatives (1/2)

- Dark Audacity
  - **Pros:** Uses Audacity's open code. Free. It provides the same functionalities as Audacity. It offers simplified toolbars and remove visual clutter, making it easier to use the tool.
  - **Cons:** Windows only.

- GarageBand for Mac - Apple
  - **Pros:** Free with your Apple computer. Easy to use. It provides the same functionalities as Audacity.
  - **Cons:** Only for Mac users. You can't collaborate with Windows users.

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Audacity Alternatives (2/2)

- [Bear Audio Editor]
  - This is a web-based tool that you can use to accomplish quick tasks such as cutting/deleting audio, merging clips, or fading audio.
  - **Pros:** Quick and easy to use. Free. Web-based editor. No software to install. Works on any operating system. Supports popular formats such as .wav and .mp3. Provides you with functions such as: cut and delete audio, merge clips, or fade audio.
  - **Cons:** Doesn't have all the functionalities you get in Audacity.

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Thank you!

—Developed by Juniper Johnson and Cara Marta Messina

- For more information on DITI, please see: https://bit.ly/diti-about
- Schedule an appointment with us! https://bit.ly/diti-meeting
- If you have any questions, contact us at: nulab.info@gmail.com

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Appendix

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Recording From a Phone

- Smartphones have become a very common way to record interview audio. Even professional journalists now primarily use their smartphones.
- Depending on the phone you have, the app you use will be different—any app that can record audio will work. These free apps are a good starting place:
  - Recorder (Google LLC) for Pixel phones
  - Voice Memos (Apple) for iPhones
  - Samsung Voice Recorder (Samsung) for Galaxy

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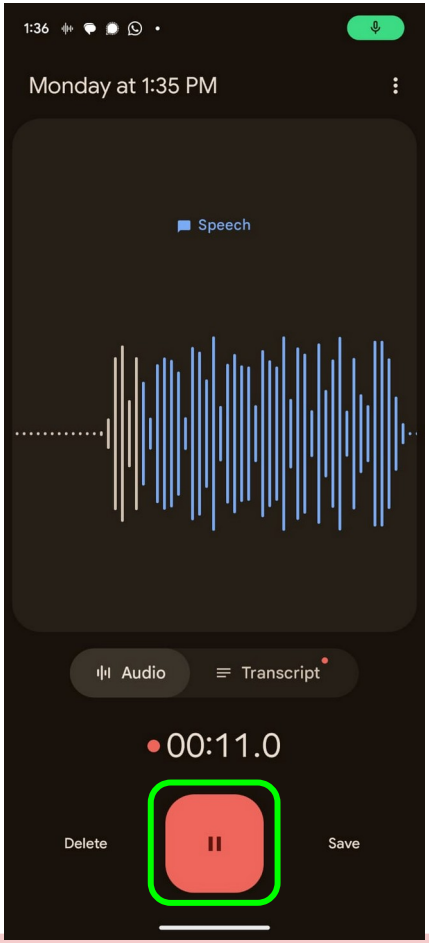
Using Audio Recording Apps

- These apps universally use a big, red button to start recording. This slide shows Google's Recorder app, but all of these buttons will be very similar, regardless of the app you are using.
- If you want to take a short break in your recording, you can hit **pause** (highlighted in green). This will stop the recording until you hit record again, but it won't end the recording as a whole.
  - To get to the pause button in Apple Voice Memos, swipe up on the recording while it's running.
- When you're done recording remember to hit **save** or **stop** (often represented by a square). This will end the recording altogether and let you send it to your computer.
- Be mindful of how your data and the recorded audio is stored on different recording apps.



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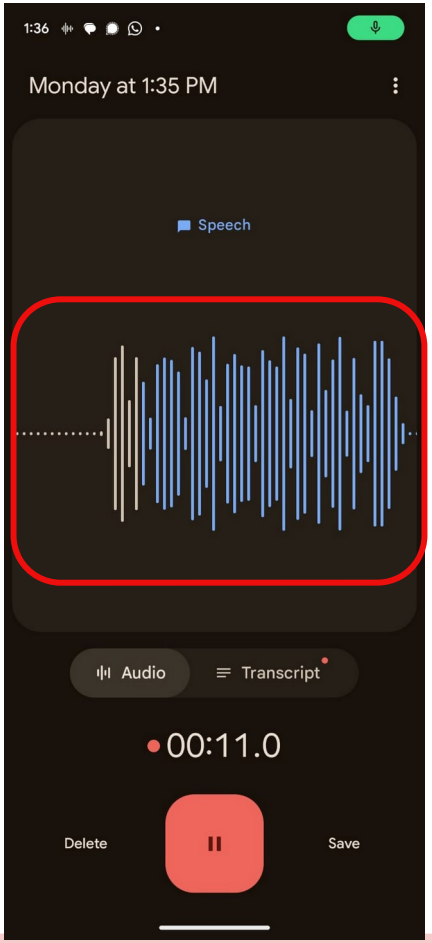
Monitoring Your Recording

- While you are recording, the app will show a **waveform** (highlighted in red), which shows the current audio input
  - **Make sure to check your waveform intermittently as you record** (especially at the beginning)
  - If **you aren't seeing any waveform or it is very small**, the phone is likely **not picking up your audio correctly**
  - The peaks and troughs of the wave show when it is picking up more and less audio. This should generally match the louder and quieter parts of your interview recording, though don't worry if it doesn't seem to be completely precise.



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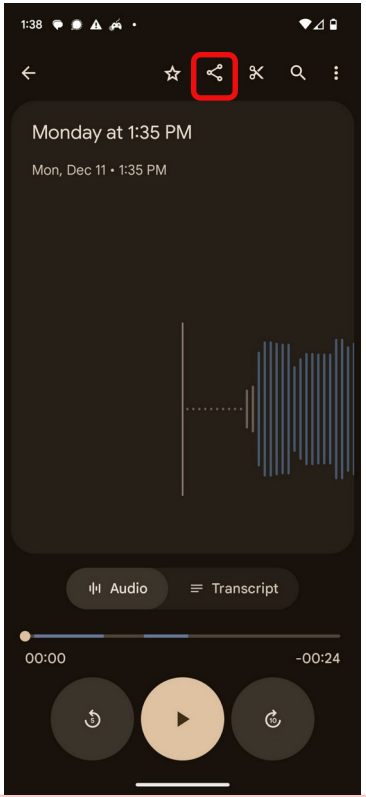
Getting the Audio From Your Android

- The easiest way to get the file from your phone to your computer will be to use the **share** function. Look for a symbol like that highlighted on the right.
  - From the share menu, you will be able to send the file to yourself in various forms, such as email.
  - Sometimes the file size may exceed the limit for email, which is where Google Drive can work better
- As soon as you have files on your computer, you can move on to audio editing!



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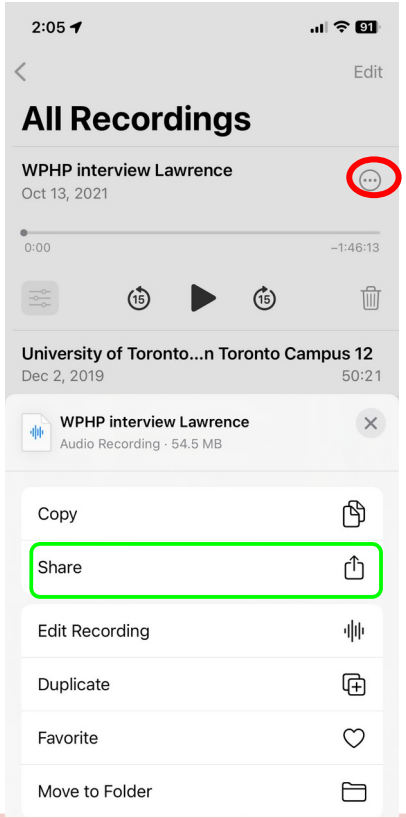
Getting Audio From Your iPhone

- To get audio out of Voice Memos, click the three dots (highlighted in red) and select “share” (highlighted in green).
- You’ll need to pick a method that works for you:
  - Airdrop and iCloud work.
  - If you download the app for Drive or Dropbox (or similar), you can send the file to those.
  - It will probably be too big a file to email to yourself.



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Collaborating with Audacity

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Collaborating with Audacity

- File Size Consideration when collaborating with Audacity.
  - At Audacity's default 32-bit float sample format / 44,100 Hz sample rate using lossless uncompressed audio, stereo Projects take 20 MB of space per minute, which rules out sending projects by email.

- Recording Options
  - If you're using Zoom/Teams, consider recording on both ends and then edit the tracks on Audacity
  - Check the volume using different operating systems: If the volume from different collaborators is very different, don't worry! You have some tools you can use 1) Effects>Amplify 2) Mixer Board.

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Collaborating with Audacity (Cont'd.)

- Getting Files to Collaborators
  - Identify a suitable free internet file transfer service or version controlled repositories: GitHub; DropSend; Dropbox.com; Hightail; MailBigFile.
  - Compress .zip archives
    - For Windows: IZArc or 7-Zip
    - For Mac: Built-in Compressor or Keka (Mac)
  - Go Analogue! → USB thumb drives.

Feel free to ask questions at any point during the presentation!

Resources

- Sharing an Audacity Project
- Sharing Tracks
- Using Zoom or Teams
- Using distributed version control system such as Git
- Adjusting volume when working collaboratively

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