

REAL TIME VIRTUAL CLASSROOM: PLAYING THE LONG GAME

Dale E. Parson, Kutztown University
Computer Science & Information Technology
Center of the Enhancement of Teaching (CET)
August 4, 2020, 11 AM, CET Zoom

<https://www.kutztown.edu/about-ku/administrative-offices/center-for-the-enhancement-of-teaching.html>

RTVC Season 1: Bending Tech to our Will

- Real Time Virtual Classroom Season 1
- Streaming August 2014 through mid-March 2020
- Dodging the 100% on-line with help from the CSC Department and our CLAS Dean
- Seasons 2 and 3 to follow below.



REAL TIME VIRTUAL CLASSROOM

Dale E. Parson, Kutztown University
Computer Science & Information Technology
Learning Technologies Open House 2015
October 16, 11:15 AM, Student Union 250

Goal: Increase Enrollment in KU's MS Computer Science Programs

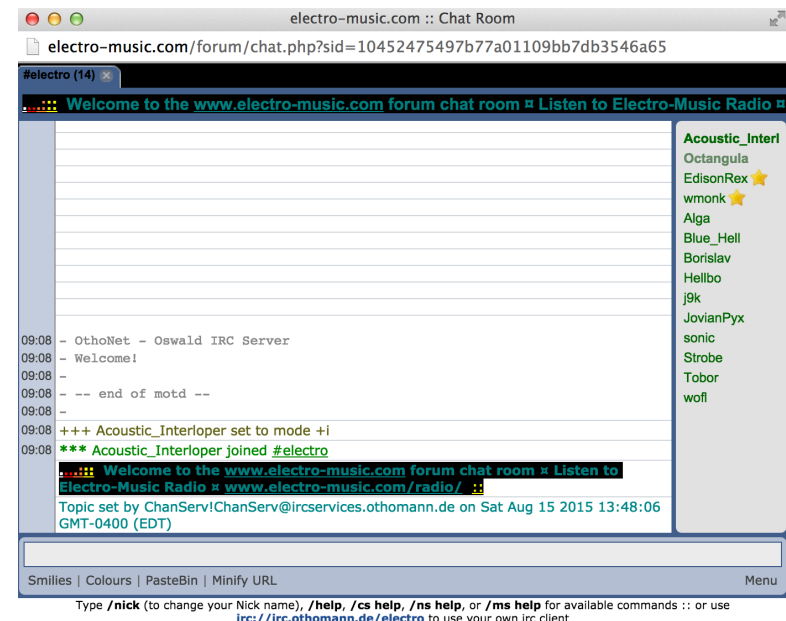
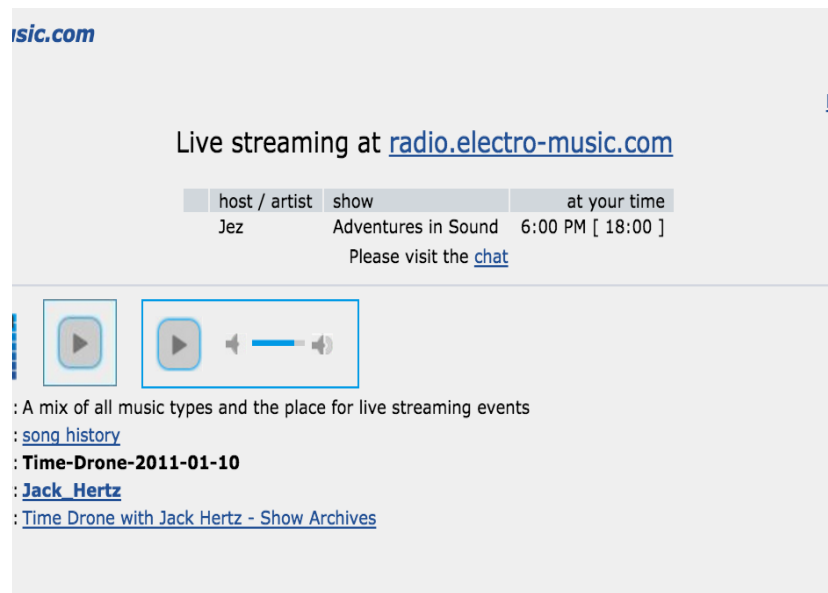
- Many rural PASSHE MS Comp. Sci. programs have dwindling enrollment.
 - Former captive audiences gone internal, Internet.
 - Job market is hot, BS + internal fine for most employers.
- KU's enrollment has been stable.
 - Somewhat near population centers.
 - Hour each way is too much for prospective students.
 - 3 programs (software dev, IT, PSM) – we want to grow.
- Jan. 2014 meeting, expanding MS program

~~Batch Mode Distance Education~~

- Non-interactive (batch mode) delivery unappealing to department.
 - Faculty do not get feedback from interaction.
 - Students do not get desired personal relationships.
 - Distance courses can be isolating & alienating.
- No need to keep using dated approaches.
 - Streaming media bandwidth steadily improving.
 - Integrated software tools for video, audio, & chat.
 - Faculty background in other on-line interaction domains.

Radio., Event., Electro-music.com

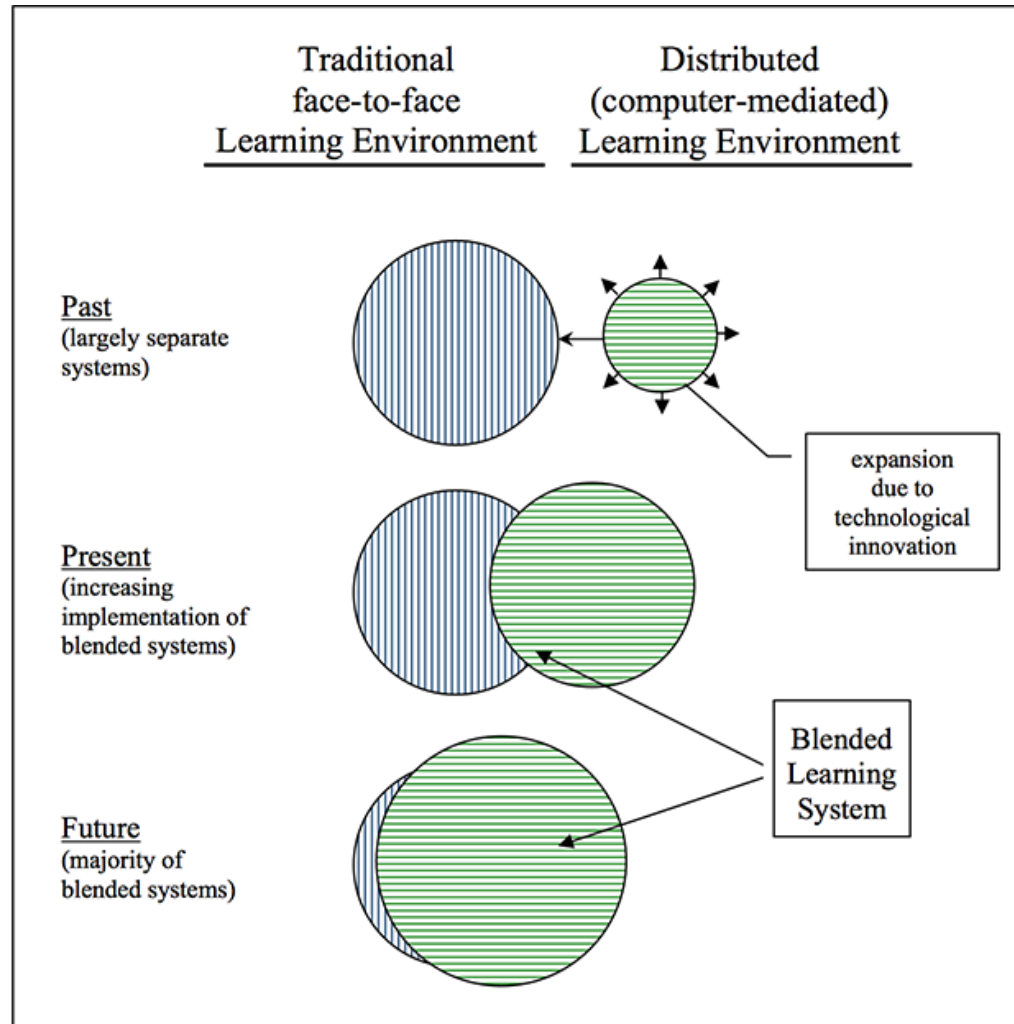
Much experience streaming live audio,
coordinating via chat for international webcasts.
Also, teaching Photoshop/Illustrator Face2Back.



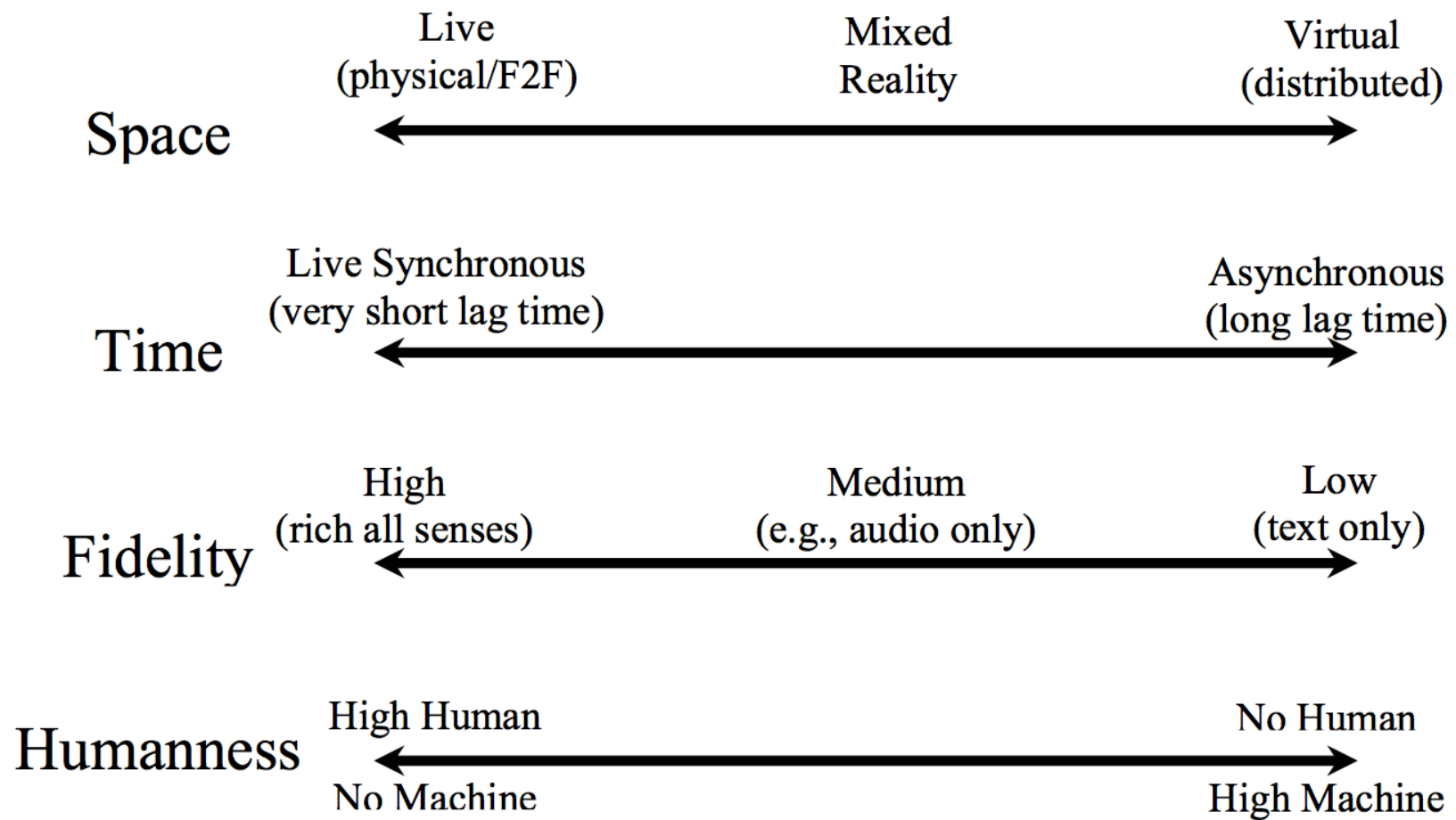
Real Time Virtual Classroom (RTVC)

- RTVC maintains in-classroom class times.
- Supports simultaneous remote attendance.
- Support video, audio, chat, lecture.
 - Existing comp. sci. on-line tools & assignments.
 - Also off-line forums, chat, etc. (D2L).
- Maintain class archives for students with occasional time-of-class conflicts.
- Pilot in some grad courses.
- Off to see Doug Scott and Jim Brenneck in KU Distance Ed support.

Charles Graham, Handbook of Blended Learning, 2005.



Charles Graham, Handbook of Blended Learning, 2005.



My 2015 TOCC Essay on RTVC

- <http://faculty.kutztown.edu/parson/RTVC/RTVCTOCC.html>

Blackboard Collaborate, D2L, established comp. sci. software engineering tools

SPRING 2015 REAL-TIME VIRTUAL CLASSROOM

AUDIO & VIDEO

Scale To Fit

Blackboard Collaborate

SMART Ink

Microsoft PowerPoint - 374913-608713 - Adib Farah - Apr 29, 2015 6:03 PM - MapReduce & Big Data Technologies.pptx - Microsoft PowerPoint

MapReduce: Word Count Example

- Map reads in text and creates a {<word>, 1} pair for every word read
- Reduce then takes all of those pairs and counts them up to produce the final count.
- If there were 20 {word, 1} pairs, the final output of Reduce would be a single {word, 20} pair

MapReduce Diagram:

Map: (dd1.v1), (dd2.v2), (dd3.v3) → Shuffle → Reduce: (dd1.v1, dd2.v2, dd3.v3) → (word, 20)

Participants:

MAIN ROOM (5)

- Parson, Dale (Moderator)
- Bachman, Matthew
- Evans, Nicholas
- Swearingen, Benjamin
- Trumble, Brandon

CHAT

6:00 PM - Swearingen, Benjamin joined the Main Room. (6:02 PM) - Swearingen, Benjamin I'm coming to the room soon

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Piloted in Fall 2014

- CSC 520 – graduate course in object-oriented software engineering.
- Students attended 1st class in person.
 - (First class attendance no longer required.)
 - Recommend testing bandwidth from home.
- Roughly 50% attend in person, 50% from home in first year. Down to 10-15% in classroom in third semester teaching this way. Success! (Up to 50% in Parson's latest year.)
- All 500-level courses taught this way. 400-level, full grad program in the works.

Protocols, etc.

- We worked out interaction protocols, continue to add to the list.
 - **Deprecated with Zoom (no raised-hand bell.)**
 - Type question, then raise hand (bell), OR
 - Raise hand (bell), then speak a question.
 - Prefer web based tools. I share entire desktop.
 - Students use audio for remote presentations.
 - There is a whole list on my web page.
- Students may gather in a dorm/appt. room.
- Archive posts by the next day.

Upsides / downsides / ongoing

- Students like it. 85-90% stay at home now.
- It mostly works. There are minor glitches.
 - Student connections may drop audio packets.
 - BBC not clever about dumping hi pitch buffers.
 - BBC temporarily lost video camera support.
 - **Screen clutter.**
- Now we need to get the word out.
 - Promotional video is almost ready to go.
 - Is there marketing budget / priority?
 - <http://www.mcall.com/business/mc-company-news-1009-20151008-story.html>

Conclusions

- Current tools and network bandwidth are adequate for supporting RTVC.
 - These will continue to improve.
- It works with current students.
 - Former KU BS computer science students.
 - Students with BS degrees in other fields.
- We need effective marketing.
 - Quality MS comp. sci. programs at affordable prices. 😊
 - We need to get the word out to the right people, at the right times, in the right places, to be effective.

Acknowledgements, links

- Doug Scott & Jim Brenneck for distance support.
- Troy Weidner / KU IT classroom support.
- <http://faculty.kutztown.edu/parson/RTVC>
- Or search “**Dale** Parson Kutztown” on the web.
 - RTVC link at bottom of my home page.
- **CSC moved to Zoom at start of Fall 2018**
- Questions?

RTVC Season 2, Episode 1: Retooling All Courses

- COVID@KU (4 down in CSC).
- March 16 through summer 2020.
- Move the pre-400 levels to RTVC.
 - CSC480 Special Topics & CSC558 Predictive Analytics II already on RTVC.
- Only 1 course to move (CSC 343).
- Team Projects CSC363 with CDE is physical, problematic.
 - Josh Miller & Zoom meetings to the rescue!

RTVC Season 2, Episode 3:

Andy Arnold's Excellent Notes (Thanks!)

- You need a second computer screen. That way you can share one screen with the students – PowerPoint or documents, etc. You use the secondary one to see all of your students on Gallery View.
- The screen with the camera should be secondary – it's the one with the Zoom Gallery View. That way your students will feel as if you are looking straight into their eyes. You will see your audience and they will feel seen. The primary screen is the one that you are sharing with the students. It has PowerPoint, etc.
- You can't use Apple's Keynote because it takes over both screens. You have to use MS PowerPoint – MS365 PowerPoint works, as does their Desktop. (For Desktop PPT -- Go to Slideshow/Set Up Show and at the top click on "Browsed by an Individual (window)")
- Do as the podcasters do: Get a decent microphone with 1/8 earbud monitor output – this way you can hear what your students are hearing and know for sure what you sound like. Earbud microphones and game headset microphones sound tinny and will exhaust your listeners.
- (I have an Audio-Technica AT2005USB Cardioid microphone that plugs into my USB. \$79.00)

RTVC Season 2, Episode 4: Dale Parson's Auxiliary Notes

- The second monitor is a must, especially for Screen Share.
- I never used the Camera before COVID except to test it.
 - Adobe Illustrator is my white board. I save & post Illustrations.
 - Josh Miller & my Teams used it for interviews, student Screen Share for demos.
 - I'll use it sparingly in fall 2020 to introduce myself.
- I second Andy's mic & earbud recommendations.
 - Zoom seems better than BBC at avoiding speaker->mic feedback.
 - Zoom is much better than BBC at eliminating "huffing helium voice", moving video blurs, and cut-outs.
 - It STILL doesn't have a student-raises-hand bell!

RTVC Season 2, Episode 5: Student Presentation Screen Shares

The screenshot displays a Zoom Meeting window with the title bar 'Zoom Meeting'. Below the title bar, there are three window control buttons (minimize, maximize, close) and two status icons (a green checkmark and a red X). The main content area shows the meeting topic 'Dr. Parson office hours' and the host 'Dale Parson'. A dialog box titled 'Advanced Sharing Options' is open, displaying the following settings:

- How many participants can share at the same time?**
 - ☒ One participant can share at a time
 - ☐ Multiple participants can share simultaneously (dual monitors recommended)
- Who can share?**
 - ☐ Only Host
 - ☒ All Participants
- Who can start sharing when someone else is sharing?**
 - ☒ Only Host
 - ☐ All Participants

Below the dialog box, the text 'Computer Audio Connected' is visible. At the bottom of the screen, there is a toolbar with various icons: Mute, Start Video, Security, Participants (1), Chat, Share Screen (highlighted in green), Polling, Record, Breakout Rooms, and an 'End' button.

One participant can share at a time
Multiple participants can share simultaneously
Advanced Sharing Options...

RTVC Season 2, Episode 6: Sharing Your Computer's Sound Output

The screenshot shows the Zoom web interface. At the top, a toolbar includes icons for Mute, Start Video, Security, Participants, Polling, New Share, Pause Share, Annotate, and More. A green status bar indicates 'You are screen sharing' with a 'Stop Share' button. The 'More' menu is open, displaying options: Chat, Record on this Computer, Record to the Cloud, Breakout Rooms, Disable Attendee Annotation, Show Names of Annotators, Hide Floating Meeting Controls, **Share computer sound** (highlighted), Optimize Screen Share for Video Clip, and End Meeting. The main content area shows the 'Upcoming Meetings' section with a table of scheduled meetings.

Start Time	Topic	Meeting ID	Start	Delete
Recurring	CSC220	979 2000 0741	Start	Delete
Recurring	CSC343	988 1475 0163	Start	Delete
Recurring	Parson CSC500-level course	969 5834 4215	Start	Delete
Recurring	Dr. Parson office hours	943 2222 3872	Start	Delete

Below the table, a message states: 'Save time by scheduling your meetings directly from your calendar.' Below this, there are links for 'Microsoft Outlook Plugin Add Zoom' and 'Firefox Add-on Download'.

RTVC Season 2, Episode 7:


Policies

- Make it clear from day 1 if you will be recording.
 - Students can use private chat if they want to keep secrets.
 - Occasionally I'll record office hour Q&A on a popular topic.
- Repeat the Chat questions when answering.
- I record & post all class sessions.
 - Some instructors require real-time attendance, won't post videos.
 - I have had students at all levels use archives as study tools.
- It is unclear whether non-DSO students are permitted to attend FTF+RTVC classes remotely.
 - RTVC classic has always allowed both options. I will continue.
 - I will accommodate students who have schedule problems by allowing attendance via archives. I do not grade on attendance. I grade on performance.
 - We need to make it possible for students to succeed.

RTVC Season 2, Episode 8:

More Policies

- I do not use Zoom passwords. You can just hide the semester Session URL inside D2L. Password is useless.
- I have not used Authenticated Sessions yet because I have had trouble testing them. If I ever get Zoom bombed, I'll move to that. I used Waiting Rooms for Advisement.

Security	× Passcode ✓ Waiting Room	
Invite Link	https://kutztown.zoom.us/j/94322223872	
Video	Host	Off
	Participant	Off
Audio	Telephone and Computer Audio	
	Dial from United States of America	
Meeting Options	✓ Enable join before host	
	✓ Mute participants upon entry 	
	× Only authenticated users can join	
	× Record the meeting automatically	

Recommended bandwidth for meetings and webinar panelists (Zoom)

- For 1:1 video calling:
 - **600kbps** (up/down) for high quality video
 - **1.2 Mbps** (up/down) for 720p HD video
 - Receiving 1080p HD video requires **1.8 Mbps** (up/down)
 - Sending 1080p HD video requires **1.8 Mbps** (up/down)
- For group video calling:
 - **800kbps/1.0Mbps** (up/down) for high quality video
- For **gallery view** and/or 720p HD video: **1.5Mbps/1.5Mbps** (up/down)
 - Receiving 1080p HD video requires **2.5mbps** (up/down)
 - Sending 1080p HD video requires **3.0 Mbps** (up/down)
- For screen sharing only (no video thumbnail): **50-75kbps**
- For screen sharing with video thumbnail: **50-150kbps**
- For audio VoIP: **60-80kbps**
- For Zoom Phone: **60-100kbps**

Recommended bandwidth for webinar attendees (Zoom)

- For 1:1 video calling: **600kbps** (down) for high quality video and **1.2 Mbps** (down) for HD video
- For screen sharing only (no video thumbnail): **50-75kbps** (down)
- For screen sharing with video thumbnail: **50-150kbps** (down)
- For audio VoIP: **60-80kbps (down)**
- Turn off student cameras except when needed.
- Turn off student mics except when in use.
- Screen share is good. Turn off instructor camera when not in use.

RTVC Season 3:

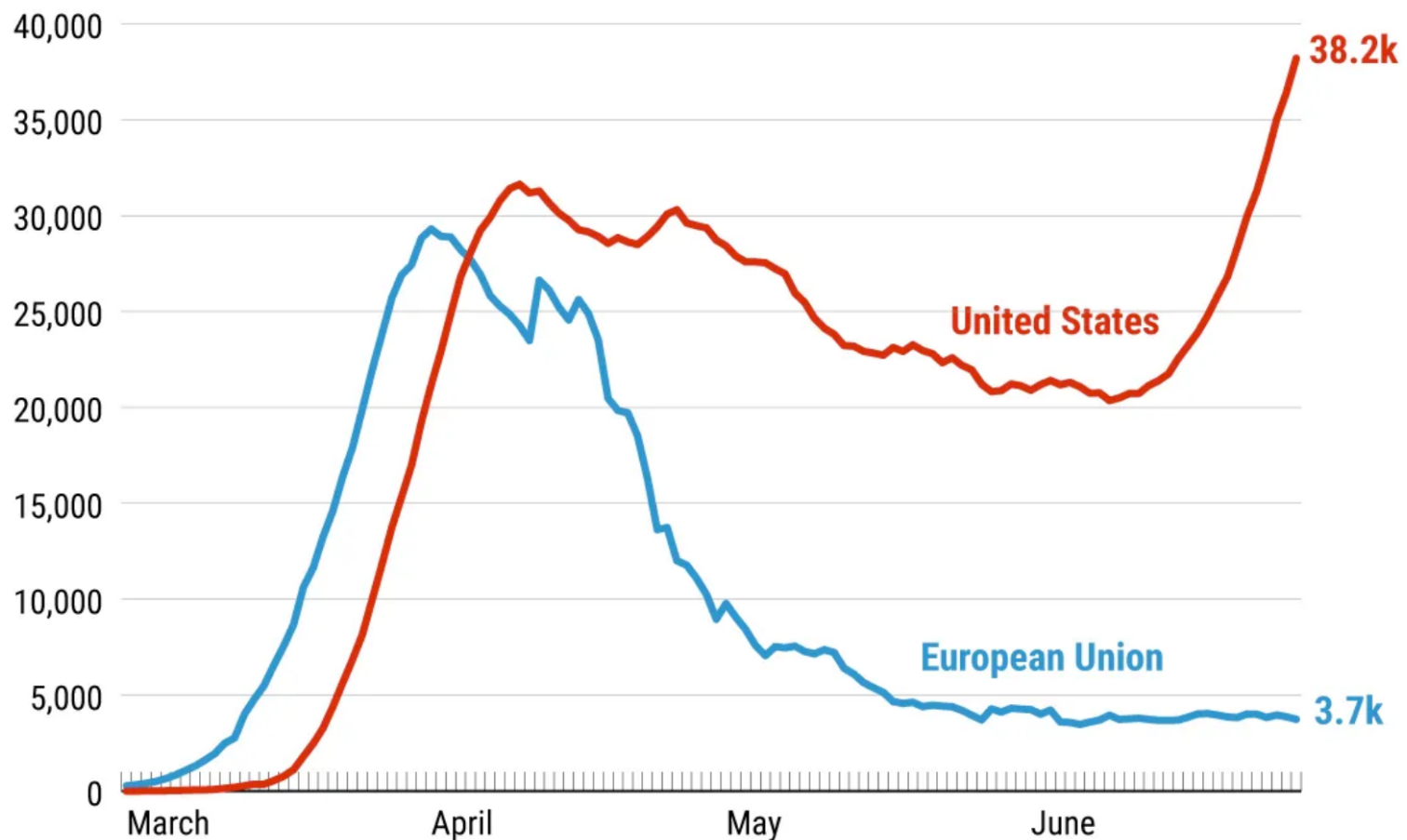
Return of the COVID

- https://socialdistancing.wtf/?fbclid=IwAR3CcPJNoch0Fs0_Zhzz5818RO5hi62Z3FuQSdshseOkhx5bRctvCmp69y0
- https://news.yale.edu/2020/07/31/students-need-be-tested-every-2-3-days-colleges-safely-reopen?fbclid=IwAR0ud8QJYZJVE89zQGsgRAqqWiNB3BIURFwLR7pwbnc_0WbBEOpfb2QBEDE
- Due to the limitations on regulating student behavior on campus, it will not be sufficient for colleges to simply monitor students for the symptoms of COVID-19 and use signs of illness to trigger isolation and contact tracing, the researchers said.
- “You cannot move swiftly enough to contain an outbreak if you wait until you see symptoms before you respond,” said co-author Amy Zheng of Harvard Medical School. “This virus is too readily transmitted by highly infectious, asymptomatic, ‘silent spreaders,’ especially if there might be sporadic parties that lead to outbreaks.”

RTVC Season 3:

Here is what denial looks like in the U.S.

Seven-day rolling average of new coronavirus cases, 1 March to 28 June



July 31: KU Campus Update for the Coronavirus Pandemic

- ASSISTANCE FROM KUTZTOWN BOROUGH POLICE DEPARTMENT
- The following message has been provided by Chief Summers of the Kutztown Borough Police Department and applies to all residents living in the borough, including KU students.
- **Noise violations in Kutztown are based on the level of noise, not the number of people at a gathering.** With that said, the larger parties are more likely to have excessive noise or disruptive conduct, increasing your chance of receiving a citation. If you have a small gathering in which uninvited guests arrive and you are worried the noise level or disruptive conduct is getting out of hand, call the police. We will help you in dispersing the party and you will NOT receive a citation. If you allow a noisy or disruptive party to continue and the police get called by a neighbor or otherwise comes to our attention, you will in all likelihood receive a citation from the police for a violation of the Borough Noise Ordinance. Manage your party responsibly and if you can't, call the police. Call the non-emergency number at 610-655-4911. **No mention of masks or distancing.**

RTVC Season 3: Return of the COVID

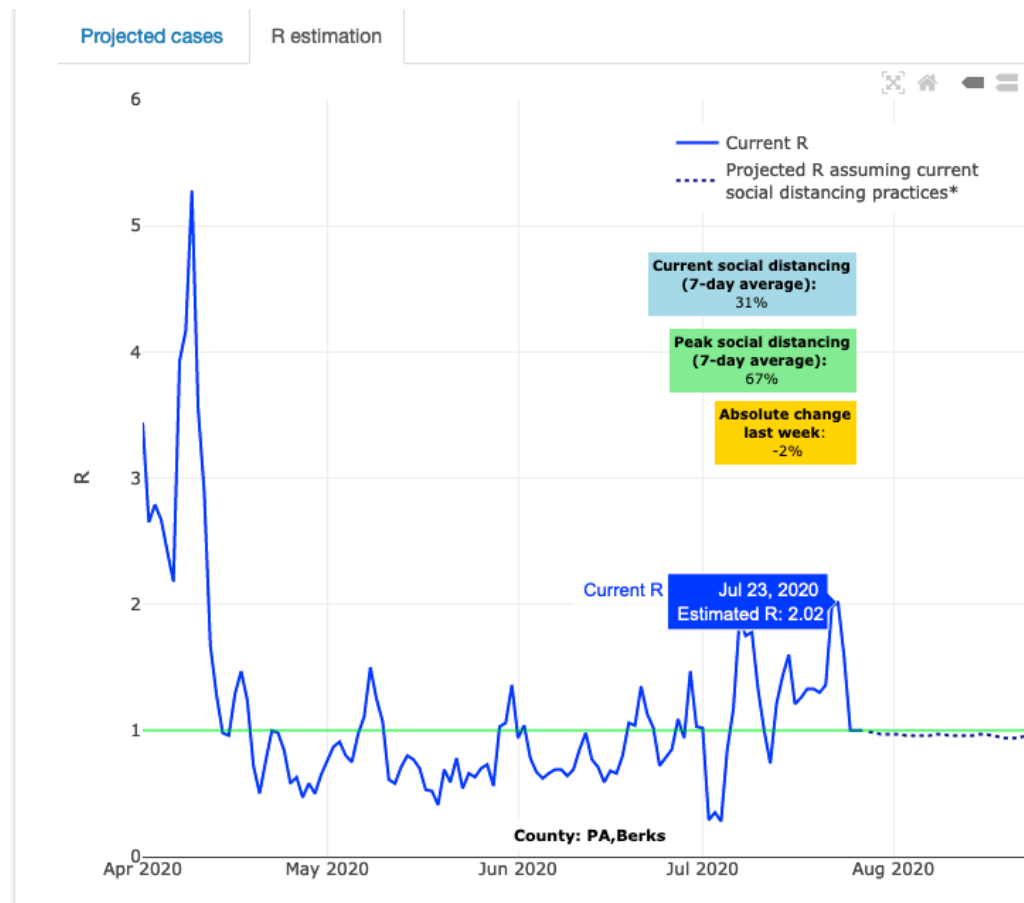
- Updated graphical simulation using May 16 rosters.
- float **R0** = .81 ; // infection rate in classroom
 - Lowest PA Rt, see <https://rt.live/us/PA>
 - No periodic COVID testing, no cross-class contact tracing, no class section quarantine, HVAC plan is less than CDC recommendations, and no plan for social distancing in crowded hallways.
- float **percentCheaters** = 0.10 ; // percentage of students
 - 60% of Kutztown Farmer's Mkt. has masks when we went Yellow
 - 90% is at the high end for Berks County stores. 95% for some.
- float **R0cheaters** = 1.1 ; // not much higher than current
- float **cheatersPerMeeting** = 7 ; // informal get-togethers

RTVC Season 3: Return of the COVID

- **cheatersPerTownParty** = 80 ; // 80 conservative estimate based on resident responses
- **numTownParties** = 6 ;
 - "Two houses on Thursday four on Friday and one on Saturday. Crowds range from approximately 35-125 these are the averages I have experienced. There were 8 houses 7 houses that regularly held large gatherings and there are often a half a dozen smaller one occasional parties and of course holidays and special occasions."
- **MinimumStartingInfected** = $(1.0 / 325.0) * 5662.0$; // = 17
 - Based on 4 in spring CSC, divided by weeks to 1, divided by CSC enrollment last term, multiplied by number students in simulation.
- **facultyRequestingNoF2F** = 0; // 0.52, based on APSCUF-KU survey, .33 base on HR requests

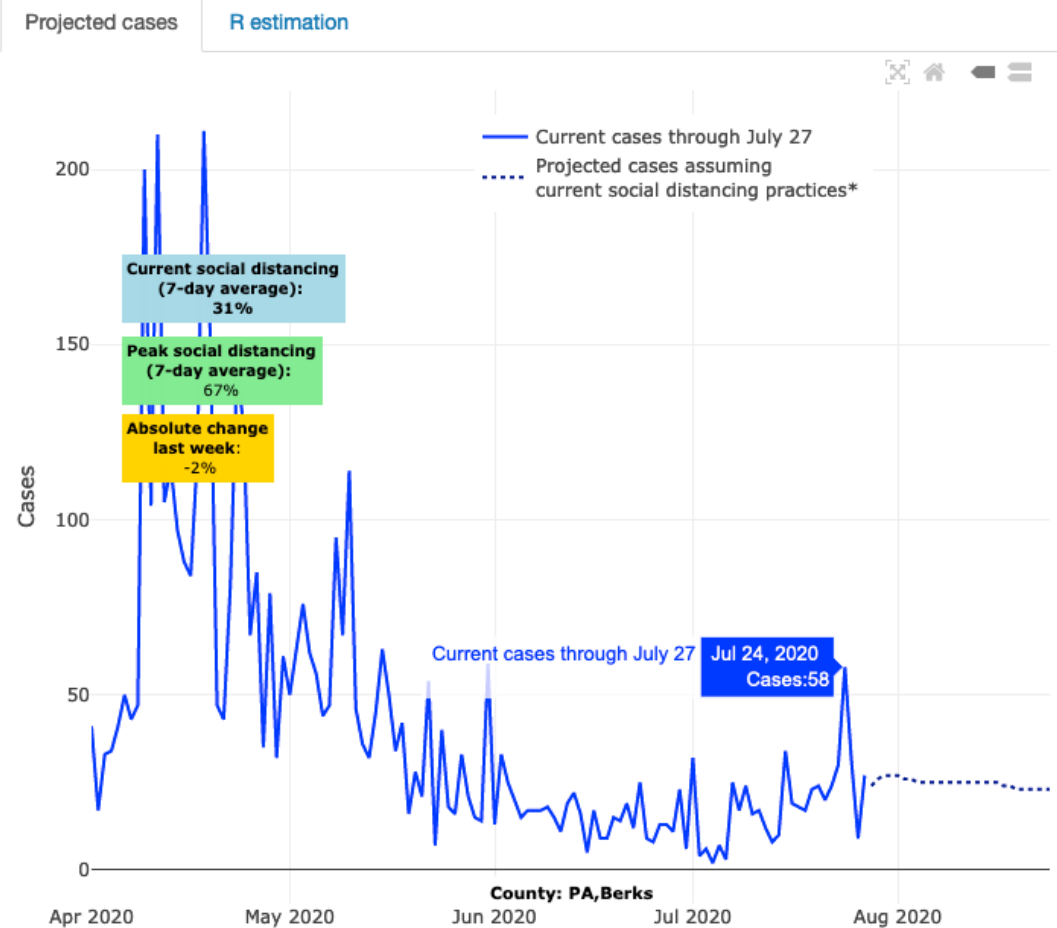
RTVC Season 3: Return of the COVID

- <https://policylab.chop.edu/covid-lab-mapping-covid-19-your-community>



RTVC Season 3: Return of the COVID

- <https://policylab.chop.edu/covid-lab-mapping-covid-19-your-community>



RTVC Season 3:

Discussion

- Q&A on Zoom, on the graphical simulation.
- Discussion about the Kutztown plan.
 - <https://www.kutztown.edu/about-ku/administrative-offices/presidents-office/statements-and-addresses/reopening-kutztown-university-in-fall-2020.html>
- Open discussion about anything.
- Thanks for attending!
- Thanks to Amy Lu for setting this up.
- Thanks to Andy Arnold for pre-presentation discussion.
- Thanks for Faculty for feedback on the simulation, especially BIO professors for improving the model.