

Background

In the face of climate change presenting as an ever-growing global threat, the COVID-19 pandemic significantly increased the prevalence of virtual medical conferences. Many organizations transitioned to online formats, leading to a notable rise in participation rates. Since then, many medical conferences have seen a significant shift towards virtual participation, with a preference for hybrid formats emerging. A 2024 survey of attendees from an international conference indicated that 56.9% preferred hybrid conferences, while 32% favored in-person and 11.1% preferred fully virtual conferences¹. As plans towards greening our meetings² and normalizing carbon-neutral conferences³ surface, a hybrid format for a medical symposium allows both in-person networking and convenience for those who may not be in position to travel. Transportation to and from in-person medical meetings comprises a substantial portion of their carbon-related emissions, making virtual symposiums a more environmentally sound option. The rates of virtual attendance at the annual conferences of the American Society of Anesthesiologists (ASA), Society for Pediatric Pain Medicine (SPPM), Society for Pediatric Anesthesia - American Academy of Pediatrics (SPA), Congenital Cardiac Anesthesia Society (CCAS) were followed and compared between 2020 and 2025.

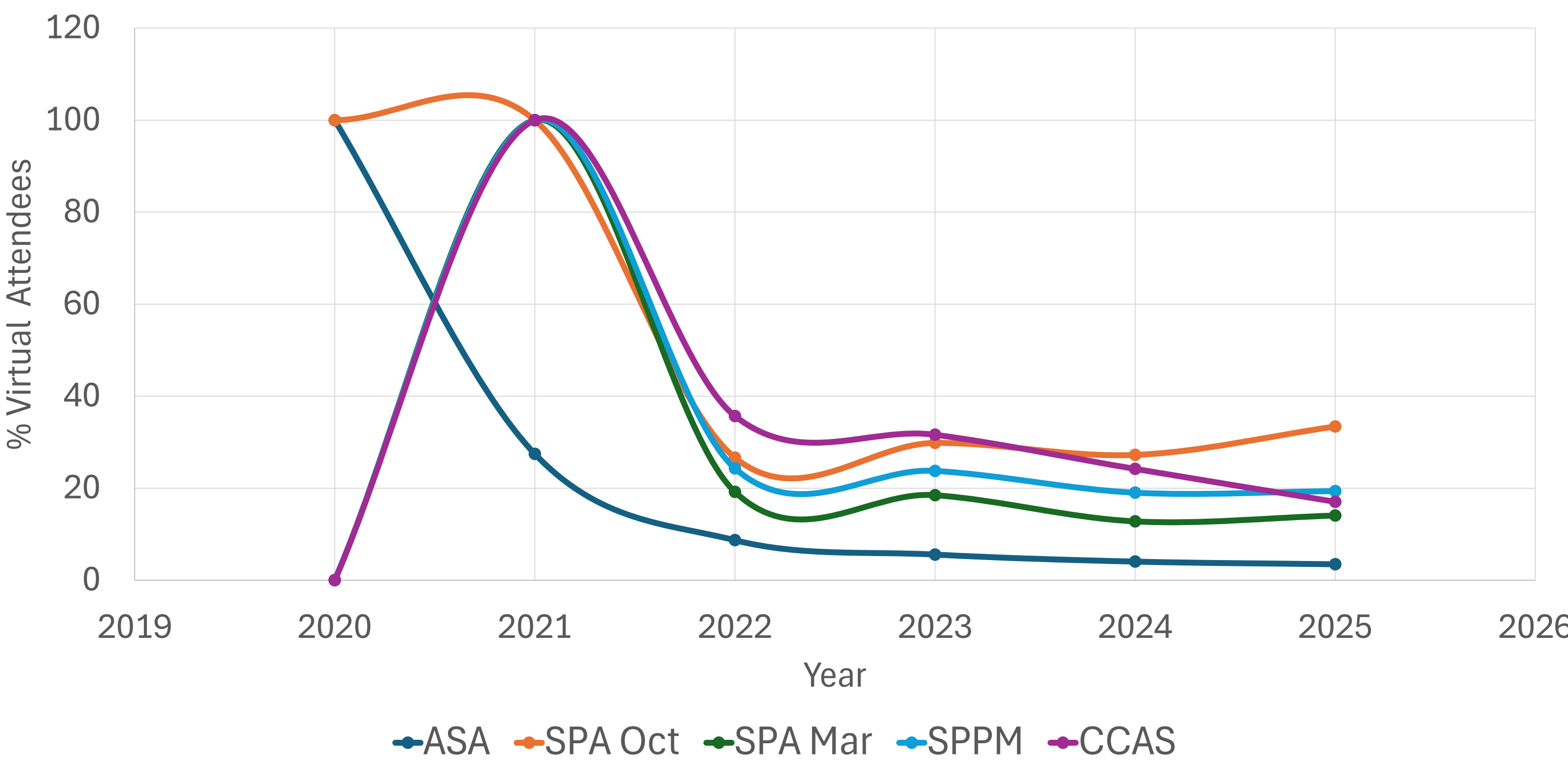
Table: Milestones on virtual conference attendance and in-person attendees’ attitudes

YEAR	PERCENTAGE OF VIRTUAL PARTICIPATION	NOTABLE TRENDS
2020	100% (for many conferences)	Complete shift to virtual due to pandemic
2021	63% of physicians preferred virtual	Preference for virtual events increased post-COVID
2024	56.9% preferred hybrid formats	Majority of attendees favor a mix of in-person and virtual

Methods

Consultation with Ruggles Staff to search archives of SPA, SPPM, and CCAS conferences between 2020 and 2025
Comparison of these figures were made to those published in the ASA Annual Reports⁴ between 2020 and 2025

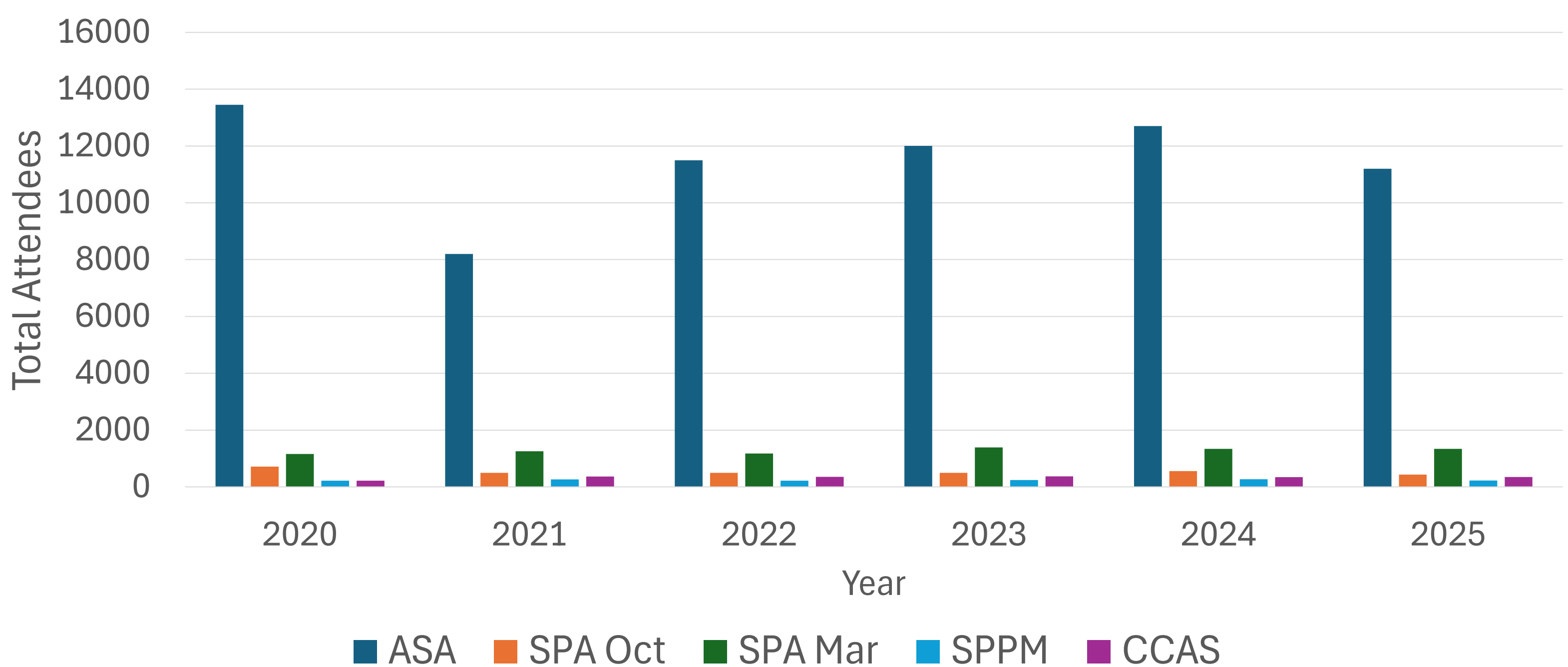
Figure 1: Percentage of virtual attendees over time at major national medical conferences



Results

Since the first Annual Meeting of the Society for Pediatric Pain Medicine, conference attendance has generally increased. This trend is somewhat consistent with the annual meeting of the ASA, although it attracts over 11 times as many attendees as the SPA annual meeting and over 60 times that for SPPM. SPA, SPPM, and ASA are all national organizations that featured the highest number of total registrants in their respective initial years of a fully virtual format be it 2020 or 2021. Virtual attendee percentages have generally decreased since then for all three meetings except for the October SPA conference, that encountered an increase to over a third of all attendees. The percentage of virtual attendees at the ASA conferences is consistently less than that of SPA or SPPM throughout the period. The 2020 ASA conference was 100% virtual while its 2021 meeting was a hybrid format. The 2020 SPA and SPPM meetings were in-person and for the first time, outside the continental US in Nassau, Bahamas. The 2021 SPA and SPPM annual meetings were 100% virtual.

Figure 2: Total (virtual and in-person) attendance over time at major national medical conferences



Discussion

Potential explanations for the peak of attendees at a society’s first virtual meeting include the lack of need for travel, convenience, decreased carbon footprint, increased general engagement during government-mandated lockdowns, novelty and the fear of missing out. Sustaining support for a hybrid medical conference requires constant monitoring for in-person and virtual attendees’ technical difficulties during the conference and plans in between meetings towards incorporating more parts of the conference itself from main stage lectures to smaller seminars, workshops, problem-based learning discussions, and round table discussions, some of which may require more than one camera at a time such as a discussion among multiple panelists or a lecture using live patients and live imaging that requires a view of the patient where the imaging takes place as well as the image itself. Given the linear program of SPA, SPPM, and CCAS meetings, the cost of livestreaming and recording may be substantially less than that of the ASA conference that can feature several simultaneous parallel sessions of lectures. Differences in registration fees exist and evolve between in-person and virtual attendees for the ASA that may influence one’s decision on participating.

Future Directions

As technology advances, the cost of support for hybrid medical conferences is expected to decrease. Given travel difficulties, attention to minimizing our carbon footprint, more research is needed to explore the various factors why some medical societies embrace hybrid medical conferences while others do not.

References

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2. Zotova O, Petrin-Desrosiers C, Gopfert A, Van Hove M . Carbon-neutral medical conferences should be the norm. *The Lancet Planetary Health.* 2020 Feb 4 (2) e48-50
3. Li G, Dixit V, Raman VT, Gandhi S. The Race to Zero: Greening Our Meetings. *ASA Monitor* 2024 Oct 88(10): p 29-33
4. <https://www.asahq.org/annualreport>