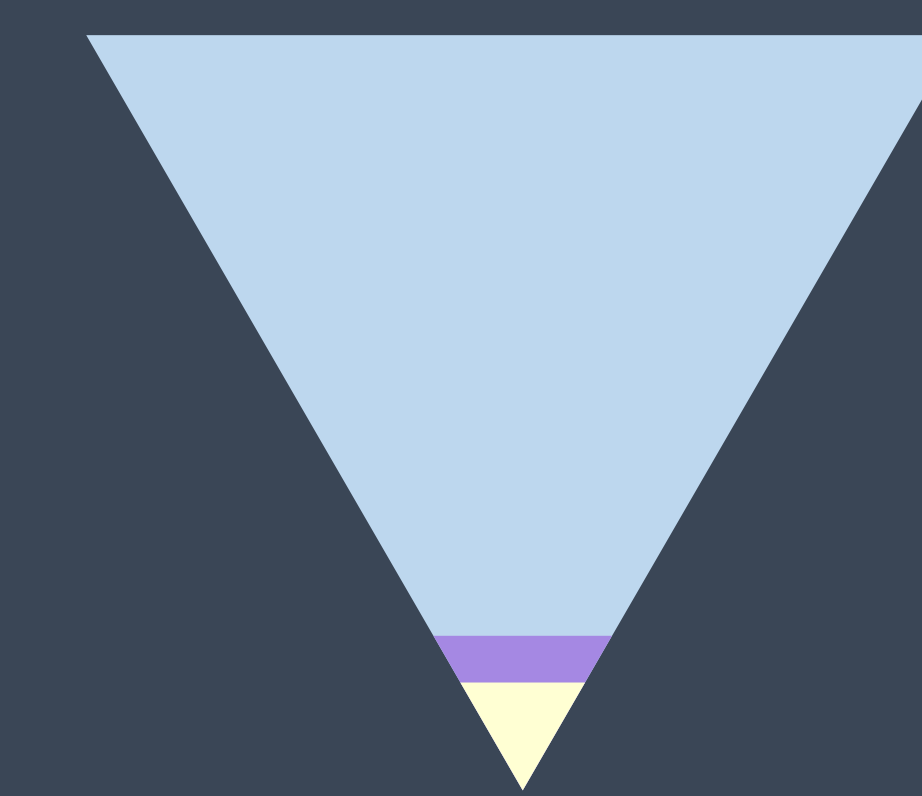




Educational Intervention Decreased Carbon Footprint and Cost of Anesthesia

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Background and Significance

- Climate change named biggest threat to global health in the 21st century^[1]
- Inhaled anesthetics are released into the atmosphere where they act as greenhouse gases
- Total intravenous anesthesia (TIVA) with propofol provides an equally safe anesthetic with a more-favorable patient experience^[2,3]
- Propofol manufacture/use/disposal equates to roughly 4 orders of magnitude less carbon emissions than desflurane^[4]
- Roughly 80% of the collective carbon footprint may be attributed to desflurane^[5]

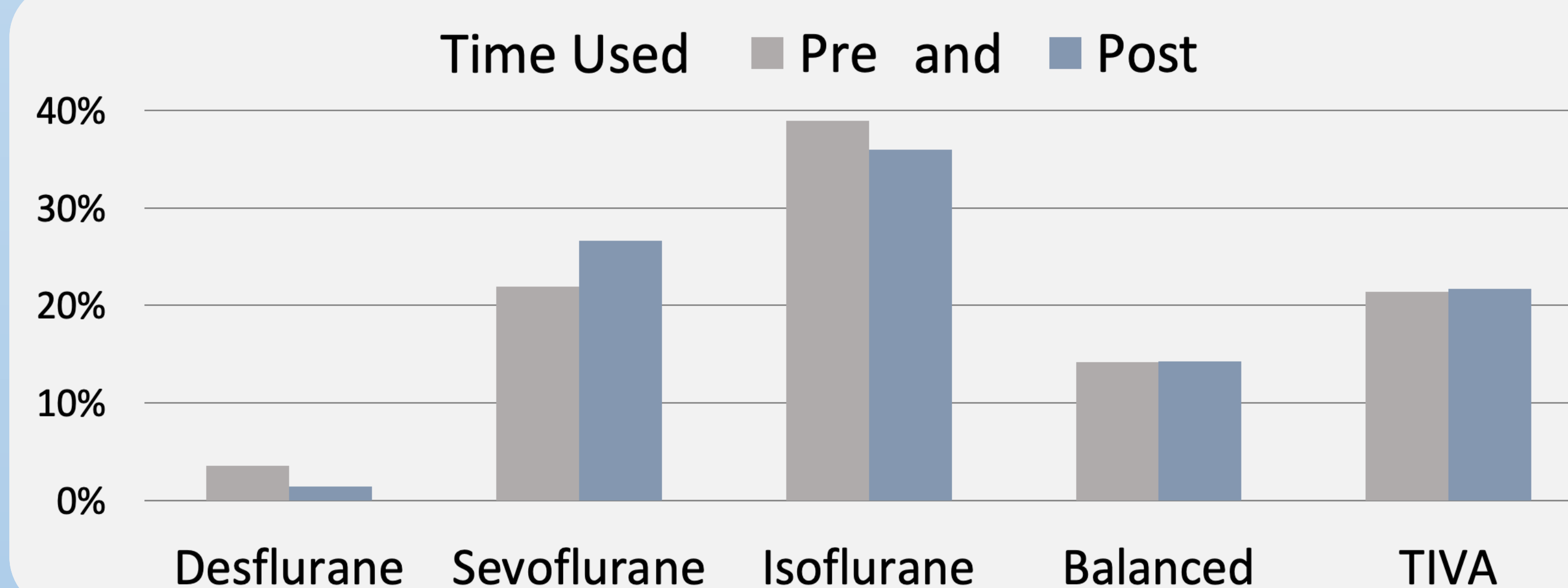
At the same flow:	KgCO ₂ e /hr.	Cost /hr.
Desflurane	127	\$21.25
Sevoflurane	2.6	\$3.89
Isoflurane	5.4	\$0.72

Methods

- An educational intervention was presented at an urban level 1 trauma center in North Carolina
- Educational material placed in breakroom and stickers placed on anesthesia machines
- Retrospective data gathered from the main operating rooms over two fourteen-day periods before (n = 686) and after (n=721) the presentation
- Pre and post presentation survey of anesthesia providers

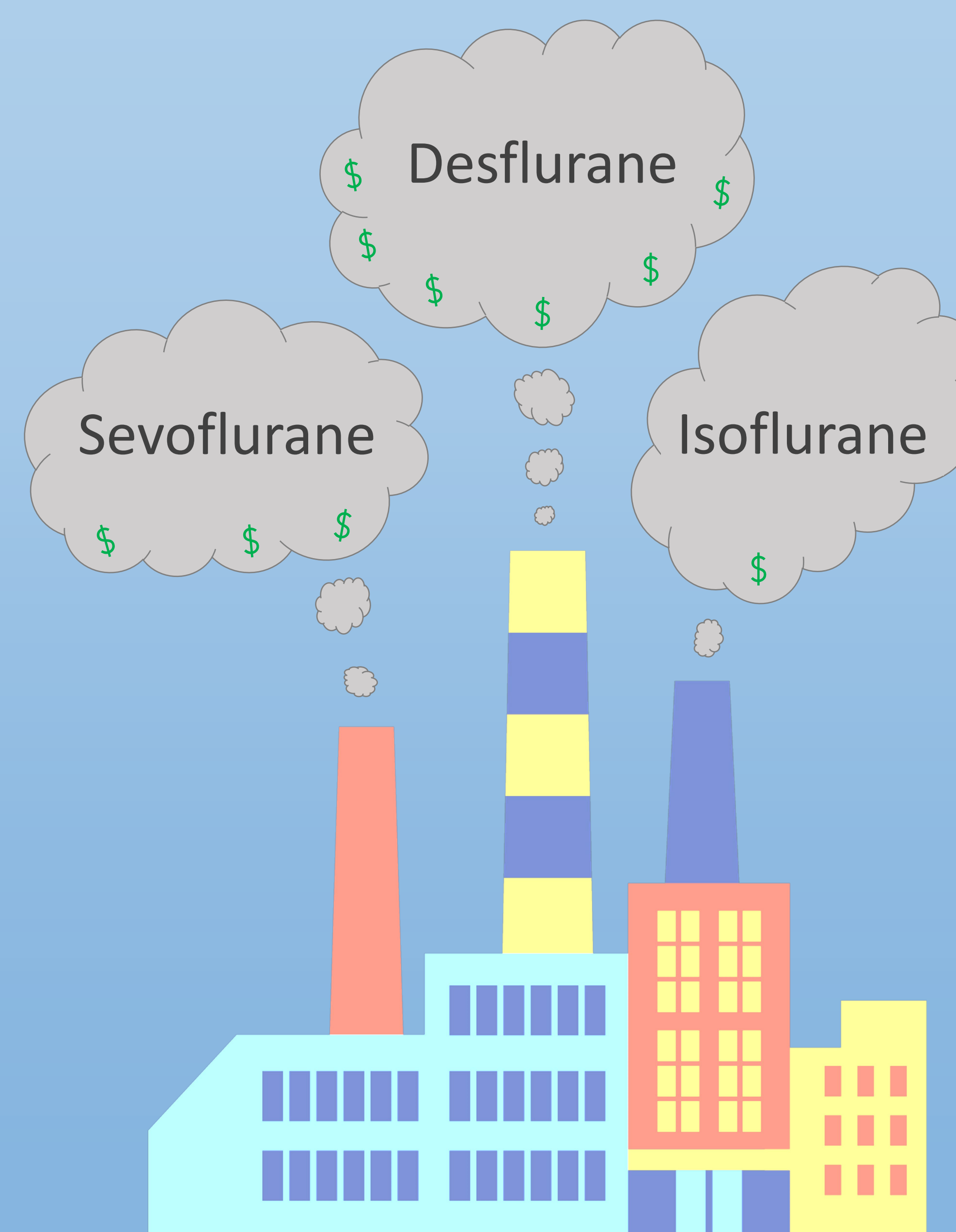
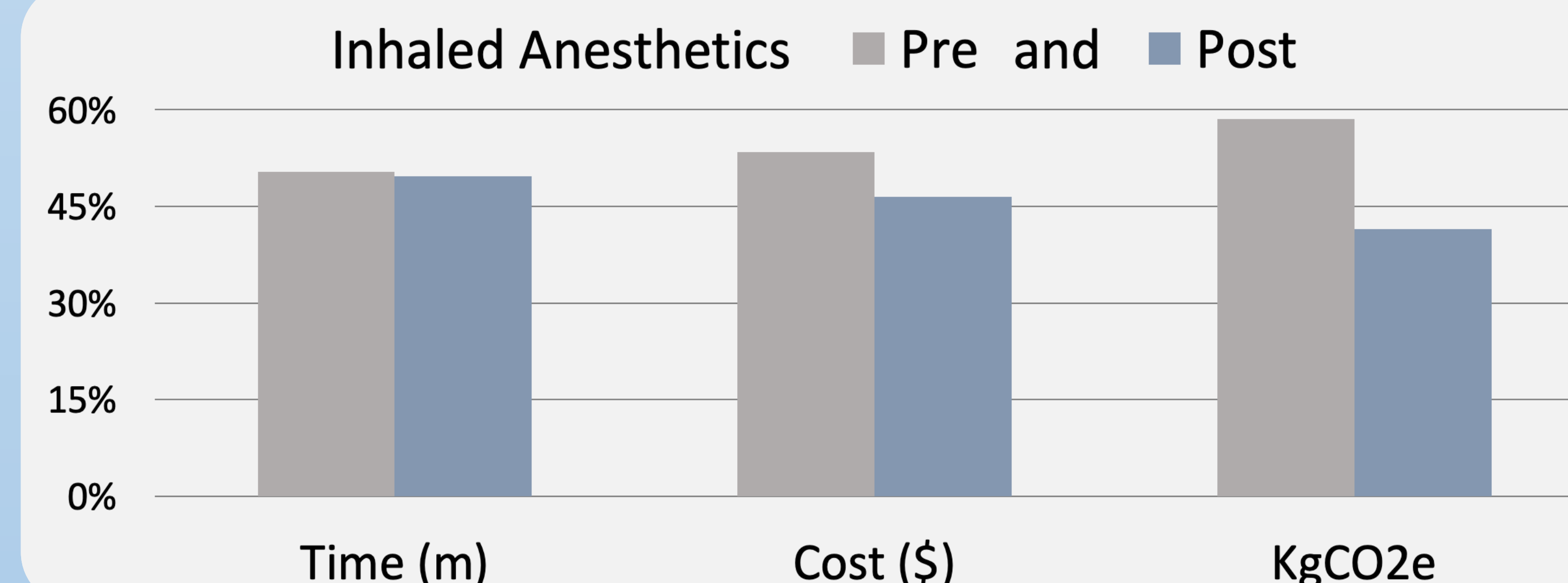
Results

- Increased knowledge of carbon footprint and cost associated with anesthetics
- 28% decrease in overall carbon footprint
- 11% decrease in overall cost
- 59% decrease in desflurane
- Virtually no change in use of TIVA or balanced anesthesia techniques



Discussion

- Virtually no change in TIVA or balanced techniques means decreased carbon footprint and cost were a direct result of providers modifying their choice of inhaled agent
- Applied to a calendar year, the changes would save \$9,125 and 104,630 KgCO₂e (equivalent to 262,956 miles driven by an average passenger vehicle)



Conclusion

- Educational intervention improved knowledge and decreased carbon footprint. Additional education to disseminate information could further decrease cost and environmental impact.
- Further decrease in environmental impact can be achieved with TIVA. Education on the benefits of TIVA usage may improve adoption of this technique.
- The greatest decrease in cost and environmental impact will occur if these changes grow to a large scale in the anesthesia community.

References:

