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Doses in contrast-enhanced mammography dual-energy digital mammography versus doses in full-field digital detector mammography

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Introduction

Contrast-enhanced mammography (CESM) is a method that combines digital mammography with intravenous administration of a contrast agent. The main indication for this examination are inconclusive findings in 2D mammography (FFDM) and USG. During the CESM, double the number of exposures are performed compared to the routine examination in FFDM. It was assessed how this affects the dose of X-rays received by women.

Material and Methods

➢ Dose comparisons were performed for the GE Pristina Senographe mammography unit.

➢ AGD (Average Glandular Dose) values were retrieved from the DoseWatch software.

➢ The acceptable values of AGD presented in the "European guidelines for quality assurance in breast cancer screening and diagnosis Fourth edition" (2006) were used as the criterion for assessing the degree of women's exposure to X-rays.

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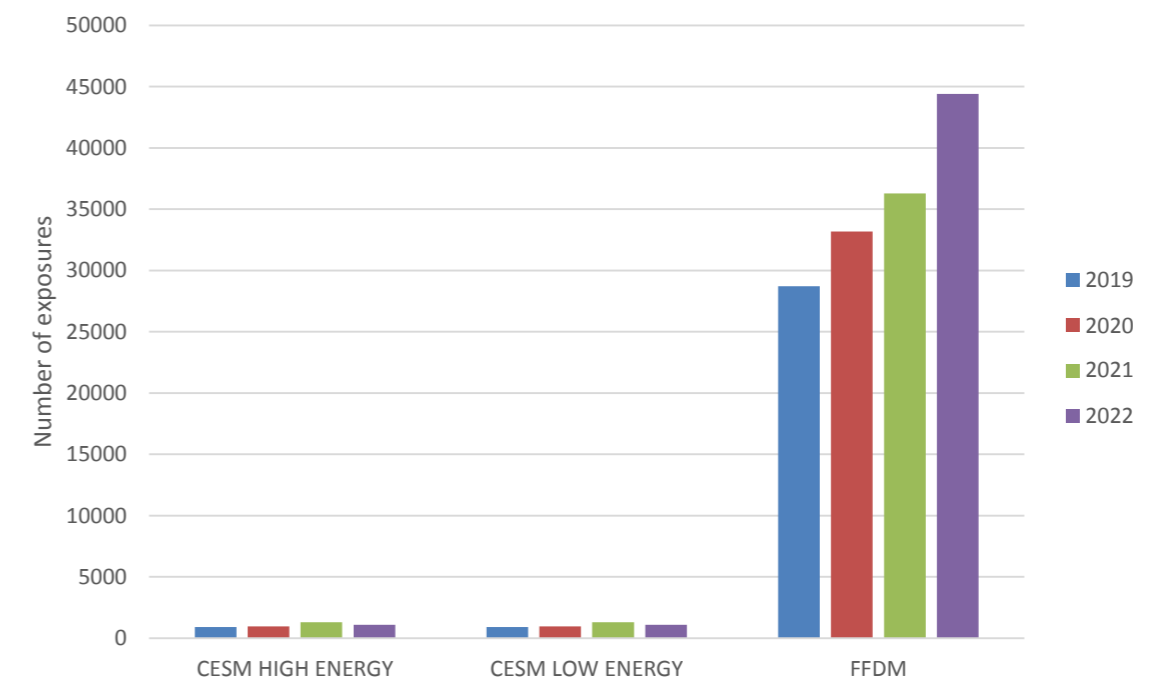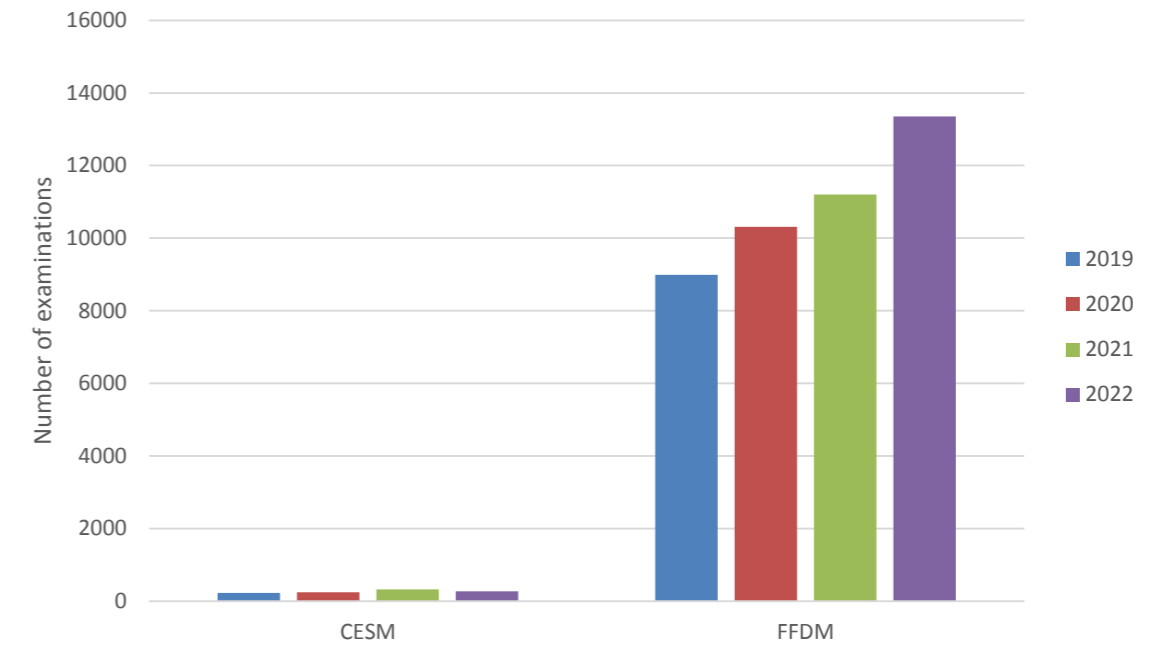
Results
AGD for a single CESM exposure
(i.e. the sum of low-energy and high-energy exposures for a given projection)

➢ The acceptable dose level was exceeded

in subsequent years for 26%, 18%, 16% and 23%

of exposures.

➢ The acceptable level of AGD was exceeded

by at least 20% mainly for breasts with

a thickness after compression less than
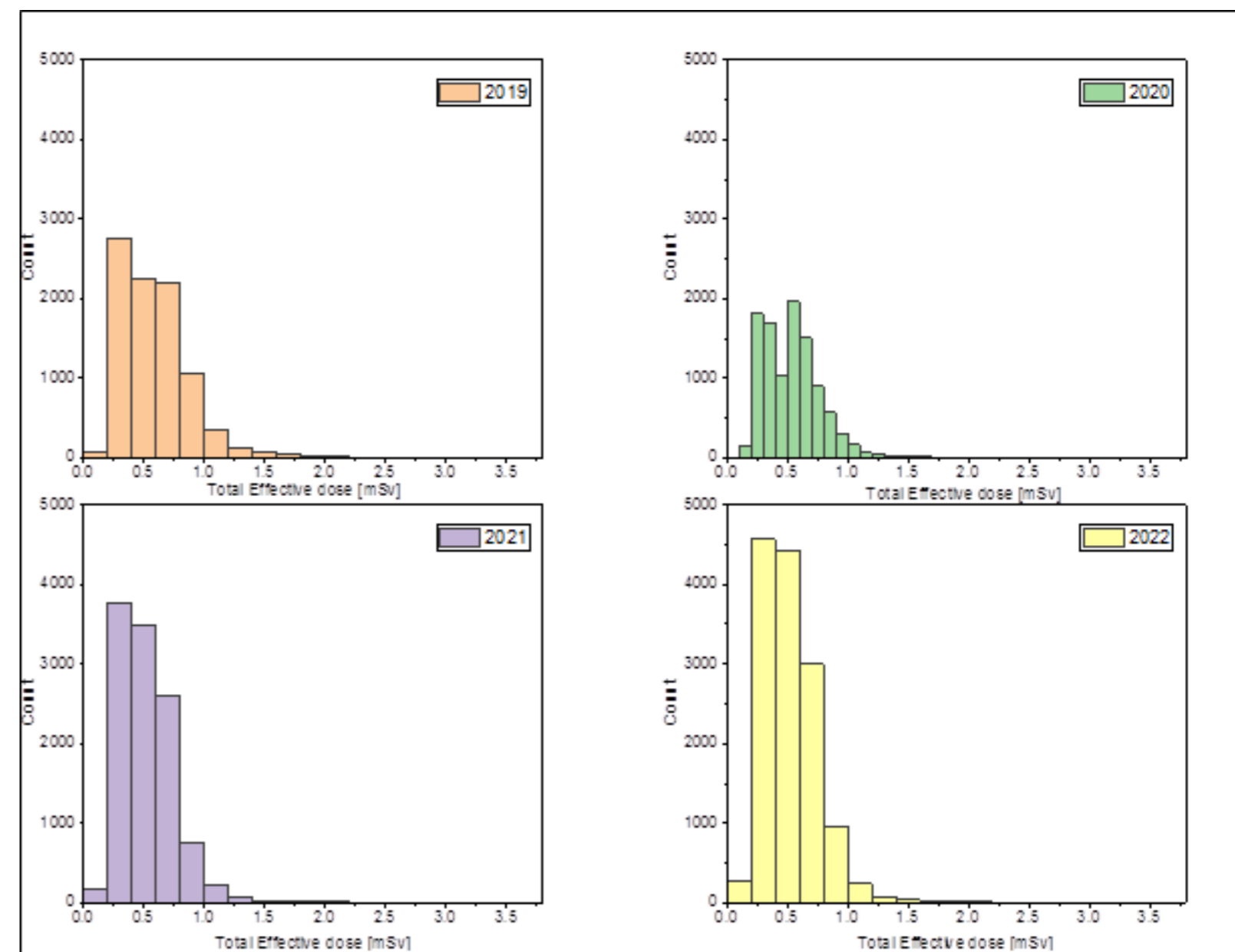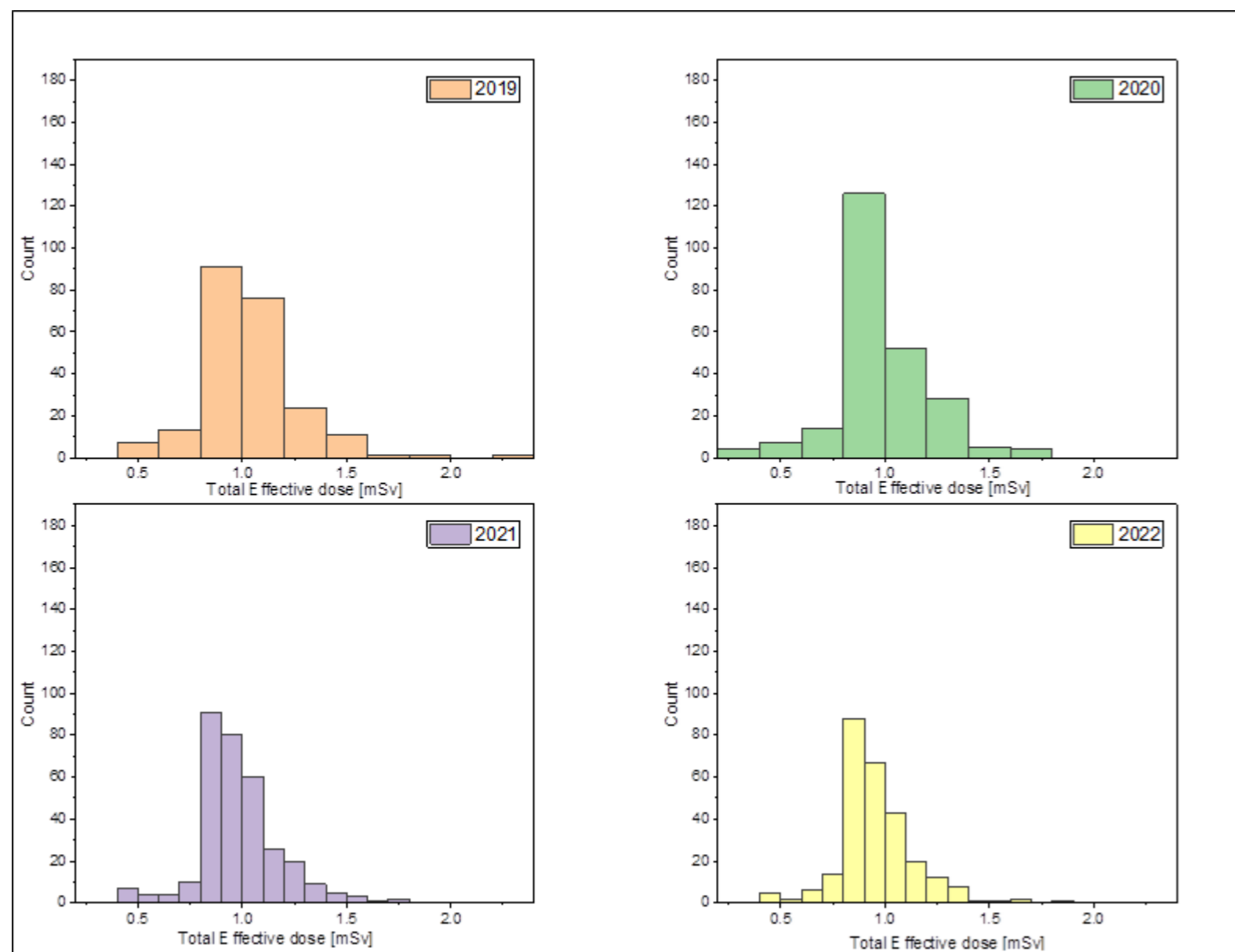
or equal to 3.5 cm (87% of all cases).
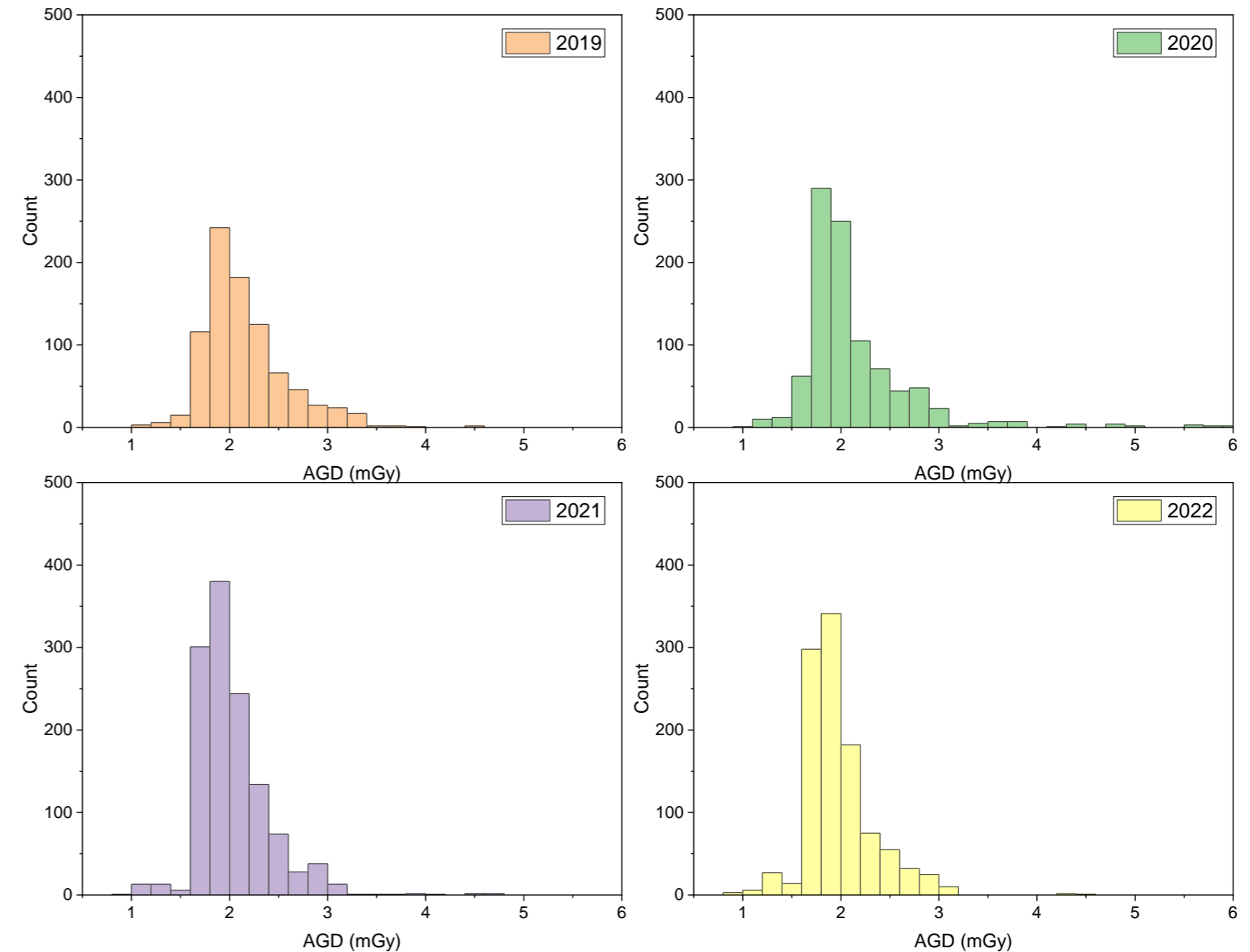
CESM Median ranged from 0.92 mSv to 1.01 mSv

FFDM Median ranged from 0.52 to 0.56 mSv

Conclusion

The AGD and the total effective doses received by women for the CESM were higher than in the FFDM. However,

the values of AGD for CESM exposures meet the acceptable limit in most cases.