

Figure S1. The aggregated heatmaps of each evaluation metric across the independent three datasets.

Figure S2. The intra-group violin plots between models with and without the salience module across all evaluation metrics on 3D-IRCADb.

Figure S3. The intra-group violin plots between models with and without the salience module across all evaluation metrics on MSD.

Figure S4. The intra-group violin plots between models with and without the salience module across all evaluation metrics on LiVS.

Figure S5. The intra-group violin plots between models with and without the salience module across all evaluation metrics on Mixed and multi-level Noised datasets.

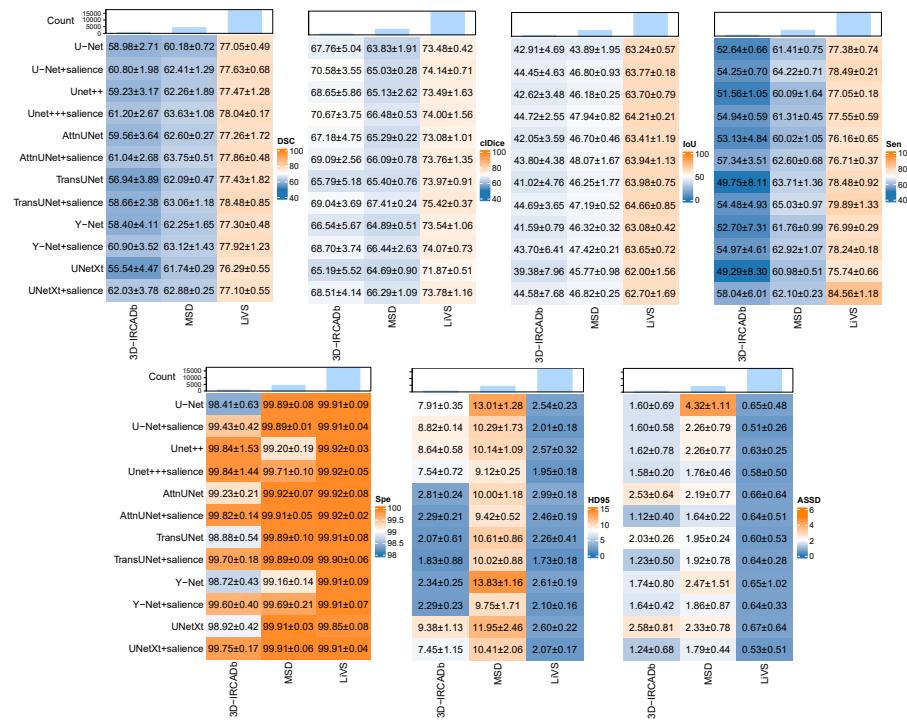
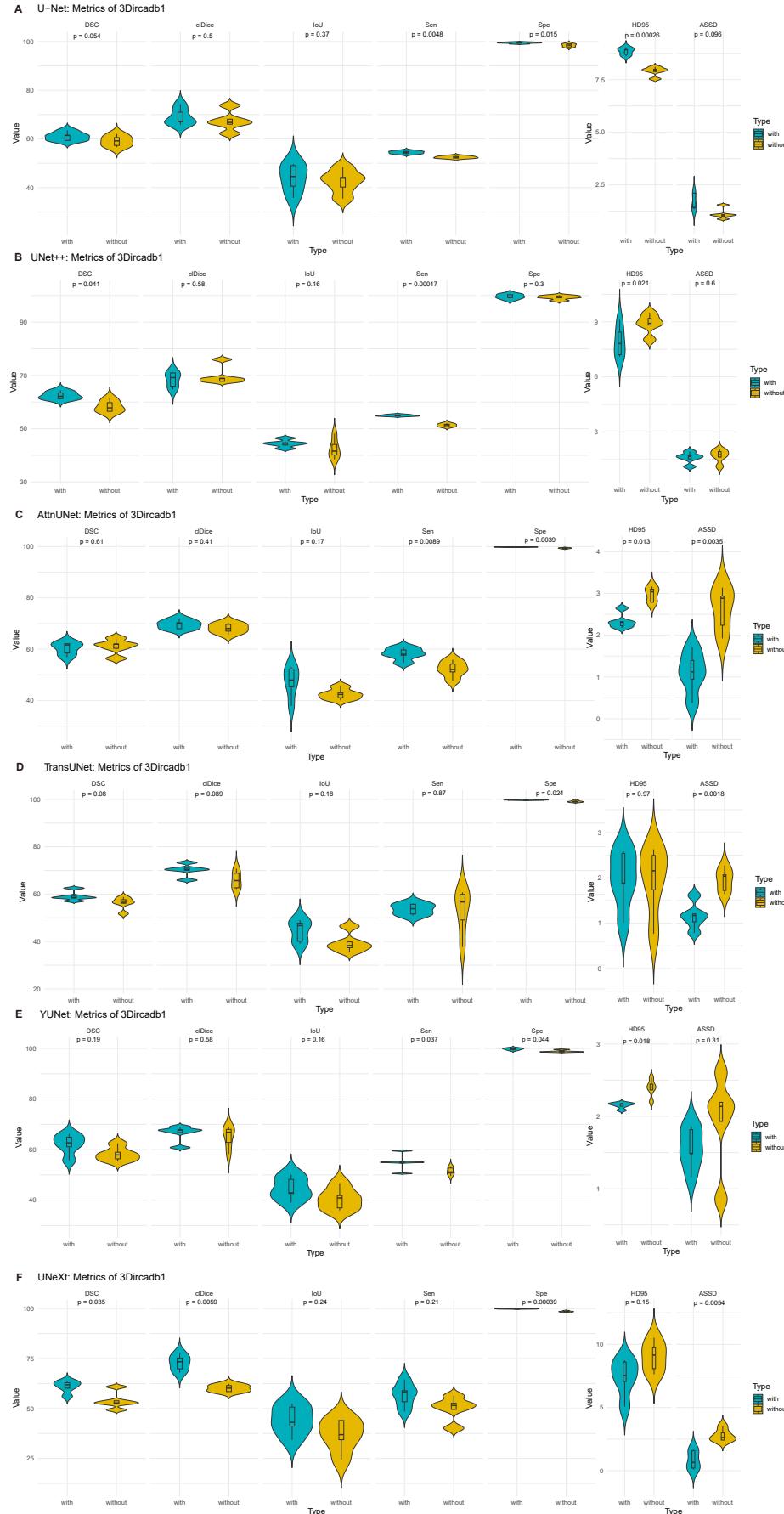
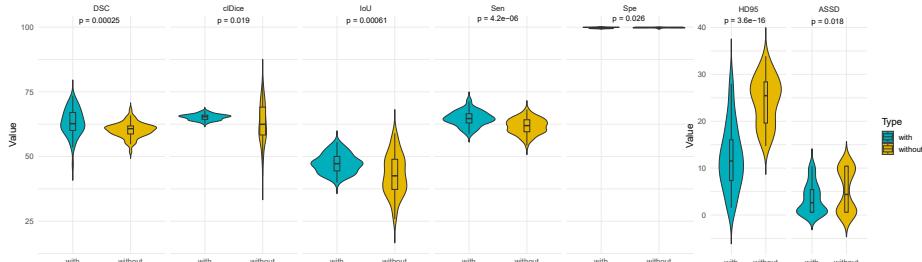
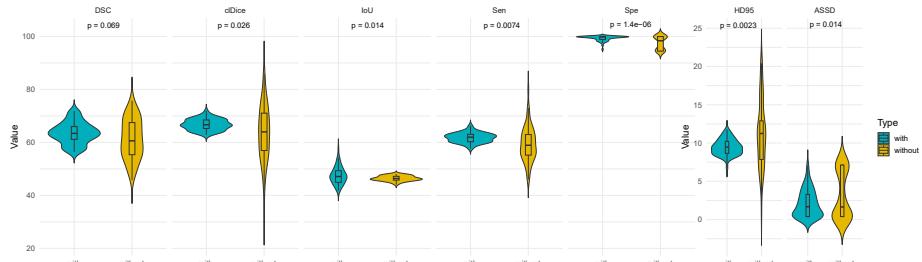
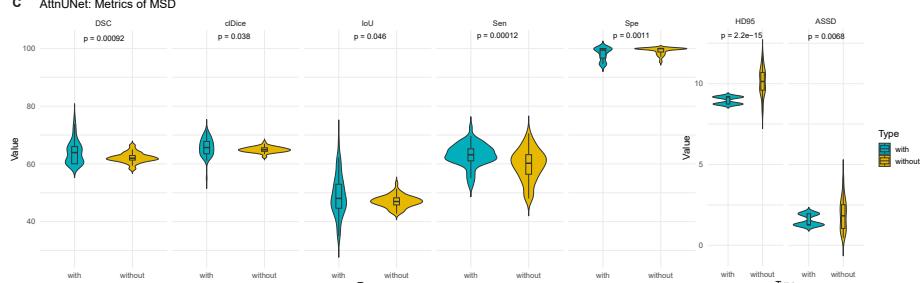
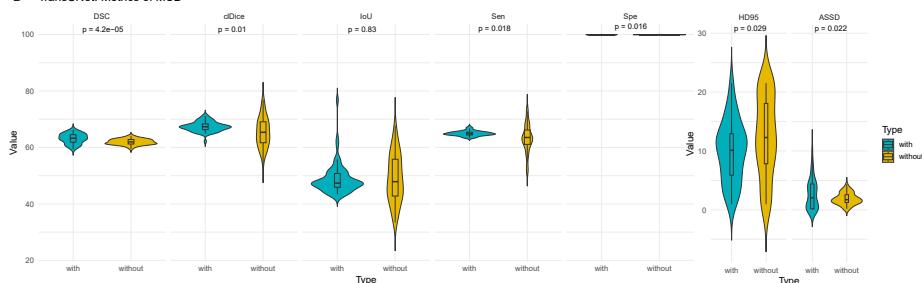
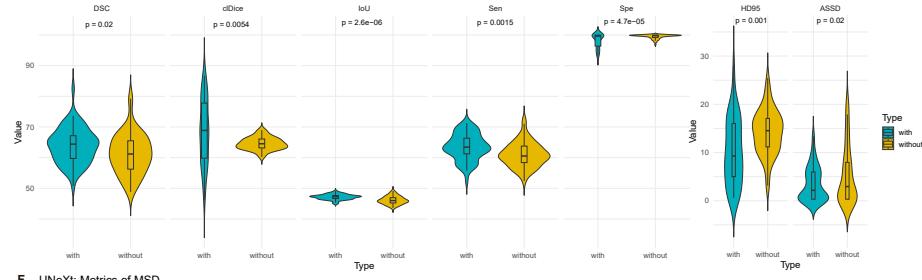
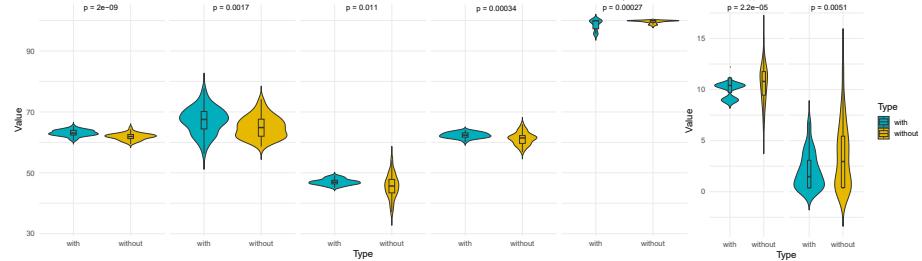


Figure S1. Aggregated heatmaps of each evaluation metric across the independent three datasets, comparing state-of-the-art models with and without the proposed connectivity-aware salience module. The color depth represents the magnitude of average performance for each setting, and the top histogram indicates the absolute size of the test sets in each dataset. **(A)** Heatmap of the DSC; **(B)** Heatmap of the cIDice; **(C)** Heatmap of the IoU; **(D)** Heatmap of the Sensetivity; **(E)** Heatmap of the Specificity; **(F)** Heatmap of the HD95; **(F)** Heatmap of the ASSD.



A U-Net: Metrics of MSD**B UNet++: Metrics of MSD****C AttrUNet: Metrics of MSD****D TransUNet: Metrics of MSD****E YUNet: Metrics of MSD****F UNeXt: Metrics of MSD**

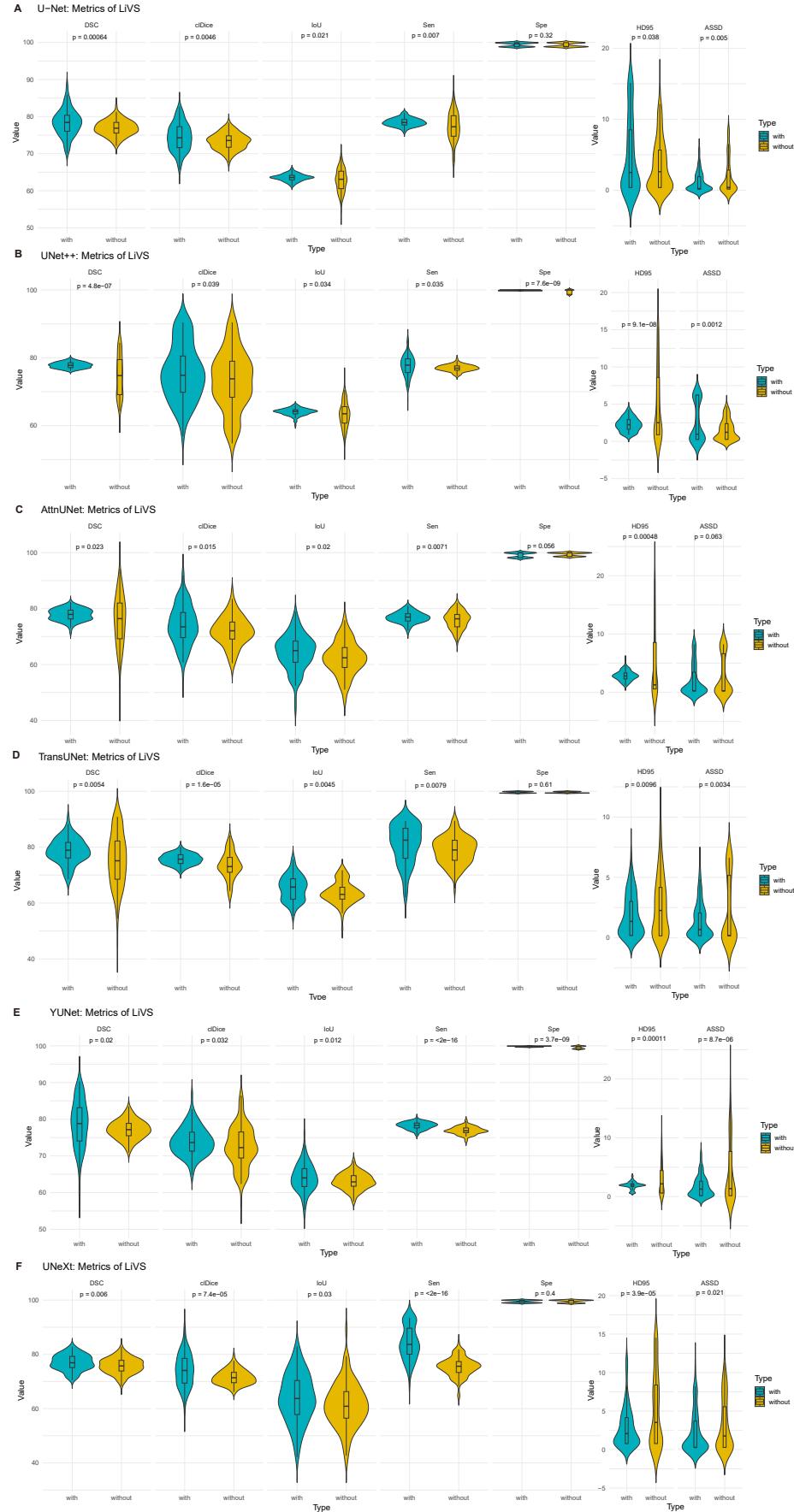


Figure S1: The impact of LiVS on the performance of six state-of-the-art models.

