State: We are interested in the true proportion of video game players (p) among U.S. adults.

Plan: We construct a one-sample z-interval for a population proportion at confidence level $C = 0.9$.

- Randomness: A random sample of U.S. adults is taken.
- Independence: Since the number of U.S. adults $\geq 10n = 10(2001) = 20010$, by the 10% rule, independence can be assumed.
- Normality: Since $n\hat{p} = 2001(0.49) = 980.49, n(1-\hat{p}) = 2001(1-0.49) = 1020.51 \geq 10$, by the Large Counts Rule, $\hat{p}$ is approximately normally distributed.

Do:

$$z^*_{\alpha=0.1} = 1.645$$

$$\text{SE} = \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} = \sqrt{\frac{0.49(1-0.49)}{2001}} = 0.011$$

$$\text{ME} = z^*\text{SE} = 0.018$$

90.0% Confidence Interval $= \hat{p} \pm \text{ME} = 0.49 \pm 0.018 = (0.472, 0.508)$.

Conclude: We are 90.0% confident that the interval (0.472, 0.508) captures the true proportion of video game players among U.S. adults.