**Task 2**

some columns that may introduce bias:

1. **Gender** (Male/Female)
   * Potential Bias: If gender is used to predict churn, it may lead to discriminatory decisions.
   * Impact: Gender-based biases in marketing or retention strategies may emerge.
2. **Senior Citizen** (Yes/No)
   * Potential Bias: Age-related bias could lead to unfair treatment of older customers.
   * Impact: Could affect pricing, service offerings, or marketing strategies.
3. **Payment Method** (Electronic Check, Mailed Check, etc.)
   * Potential Bias: Certain payment methods may correlate with financial stability or digital literacy.
   * Impact: Could lead to biased interpretations of customer preferences and churn risks.

**Bias Analysis Based on Distribution:**

1. **Gender:**
   * Nearly balanced (50.5% Male, 49.5% Female).
   * Bias Risk: Low, but gender-based differences in churn should be analyzed carefully to avoid stereotypes.
2. **Senior Citizen Status:**
   * 83.8% are not senior citizens, while 16.2% are seniors.
   * Bias Risk: High, as seniors are underrepresented, potentially skewing predictions or leading to age-based disparities in service.
3. **Payment Method:**
   * **Electronic check**: 33.6%
   * **Mailed check**: 22.9%
   * **Bank transfer (automatic)**: 21.9%
   * **Credit card (automatic)**: 21.6%
   * Bias Risk: Medium, as customers who prefer electronic checks may have different churn behaviors, possibly linked to financial or technological factors.