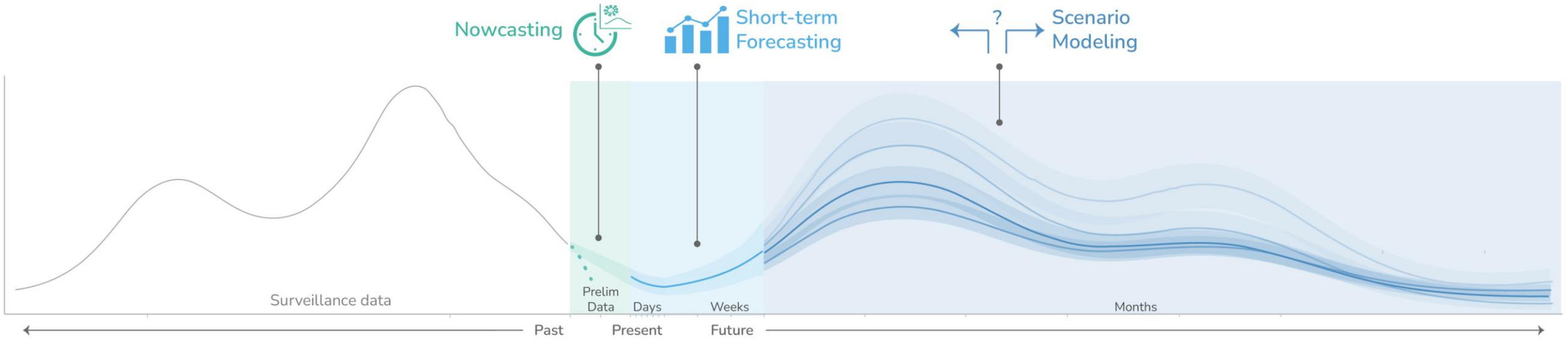
# Risk Assessments

Practical Modeling Concepts for Public Health

# Different types of qualitative assessments and modeling outputs are useful at different horizons

**Qualitative assessments:** Rapid, early evaluations of potential outbreak trajectory and risk posed to a population




Nowcasts: Estimate real-time disease burden based on partially reported data

Short-term forecasts: Predict disease burden in the coming days and weeks

Scenario models: Compare different potential futures (or pasts) under varied assumptions

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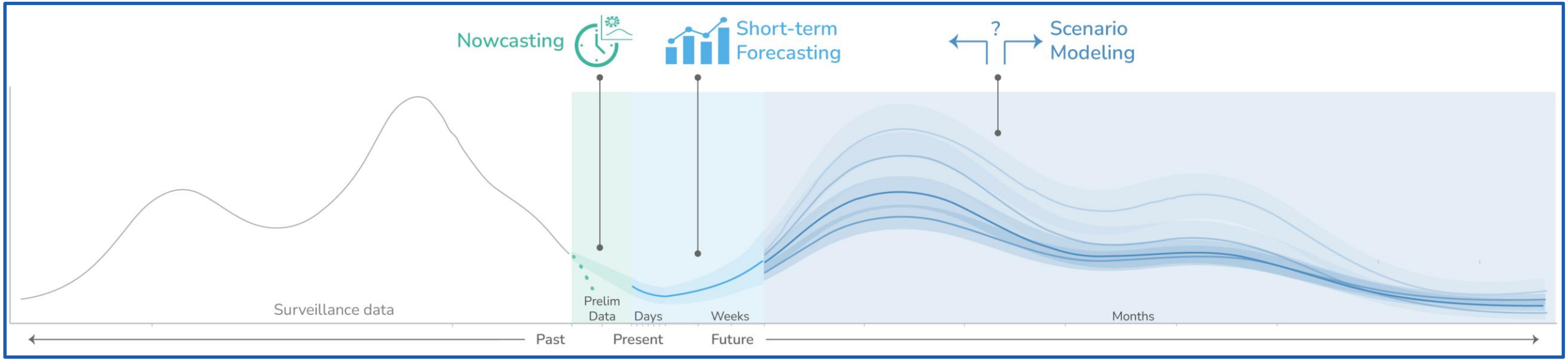


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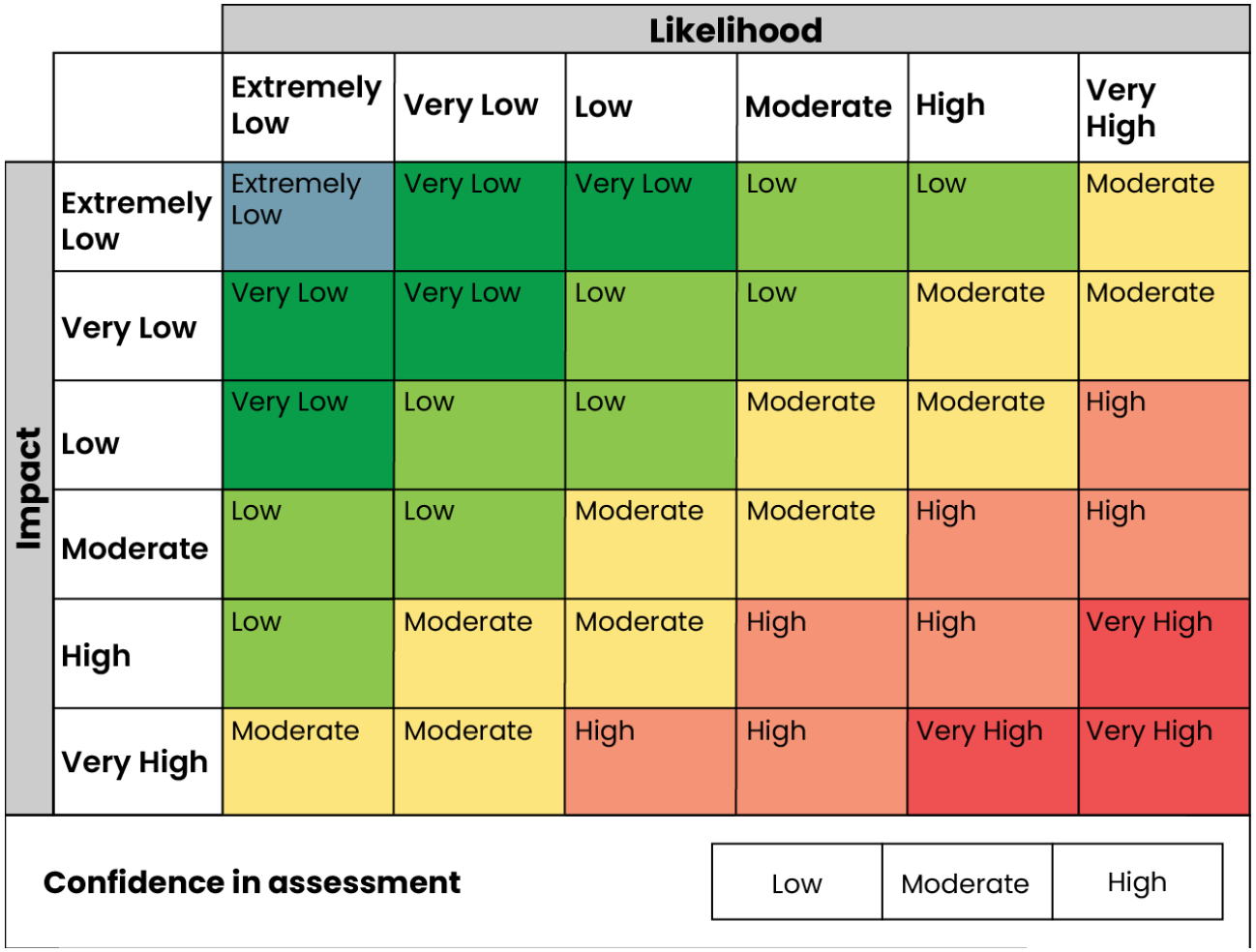
# Qualitative outbreak risk assessment

| | |
|---|---|
| What is it? | Rapid assessment of potential public health implications of an outbreak |
| Why is it useful? | Can be used for risk communication and response decision-making, when quantitative data are limited (like early in outbreaks) |
| Example inputs | Existing literature, subject-matter expert input, historical data |

# Risk assessments combine impact and likelihood



| Impact \ Likelihood | Extremely Low | Very Low | Low | Moderate | High | Very High |
|---|---|---|---|---|---|---|
| **Extremely Low** | Extremely Low | Very Low | Very Low | Low | Low | Moderate |
| **Very Low** | Very Low | Very Low | Low | Low | Moderate | Moderate |
| **Low** | Very Low | Low | Low | Moderate | Moderate | High |
| **Moderate** | Low | Low | Moderate | Moderate | High | High |
| **High** | Low | Moderate | Moderate | High | High | Very High |
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| **Confidence in assessment** | Low | Moderate | High |
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|---|---|---|

**Likelihood** of infection refers to the probability or extent of infection across the population of interest. This depends on factors such as:

- Likelihood of infection in the population
- Number of people infected
- Level of population immunity against infection
- Current response capacity to limit spread, such as contact tracing or availability of testing

# Risk assessments combine impact and likelihood

**Impact** of infection refers to the collective impact of individual infections on society as well as population-wide impacts, and considers factors such as:

- The severity of disease
- Level of population immunity against severe outcomes
- Current resources available to limit the societal impact of infection, including medical countermeasures like vaccination or treatments

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**Confidence** considers factors such as:

- Quality of evidence
- Availability and gaps in evidence
- How well lines of evidence corroborate each other

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For more information, contact CDC
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