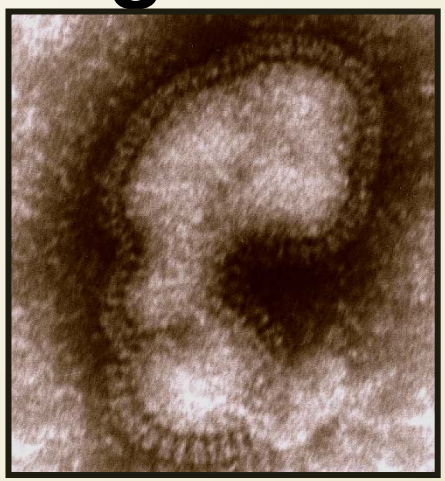
Seasonality of influenza activity in Hong Kong and its association with meteorological variations



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Background:

- Influenza carries an important health burden
- In 2008, 504 influenza cases admitted to Prince of Wales Hospital
- Better understanding on infection pattern is essential to achieve cost-effective control

Background:

- Temperate regions have a consistent annual peak in winter
- Tropical & subtropical regions are more variable, and less information available
- Hong Kong known to have “some” influenza activity in summer
- Better understanding on seasonality helps immunization and healthcare resource planning

Study Objective 1:

- Characterize the seasonality of influenza activity in Hong Kong

Study population:

- 10 years: 1997-2006
- Confirmed influenza A & B
- Admitted to Prince of Wales Hospital

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Influenza admissions 1997-2006

- 10 year study period:

  Total = 7538 patients

  Flu A: 6076 **(81%)**

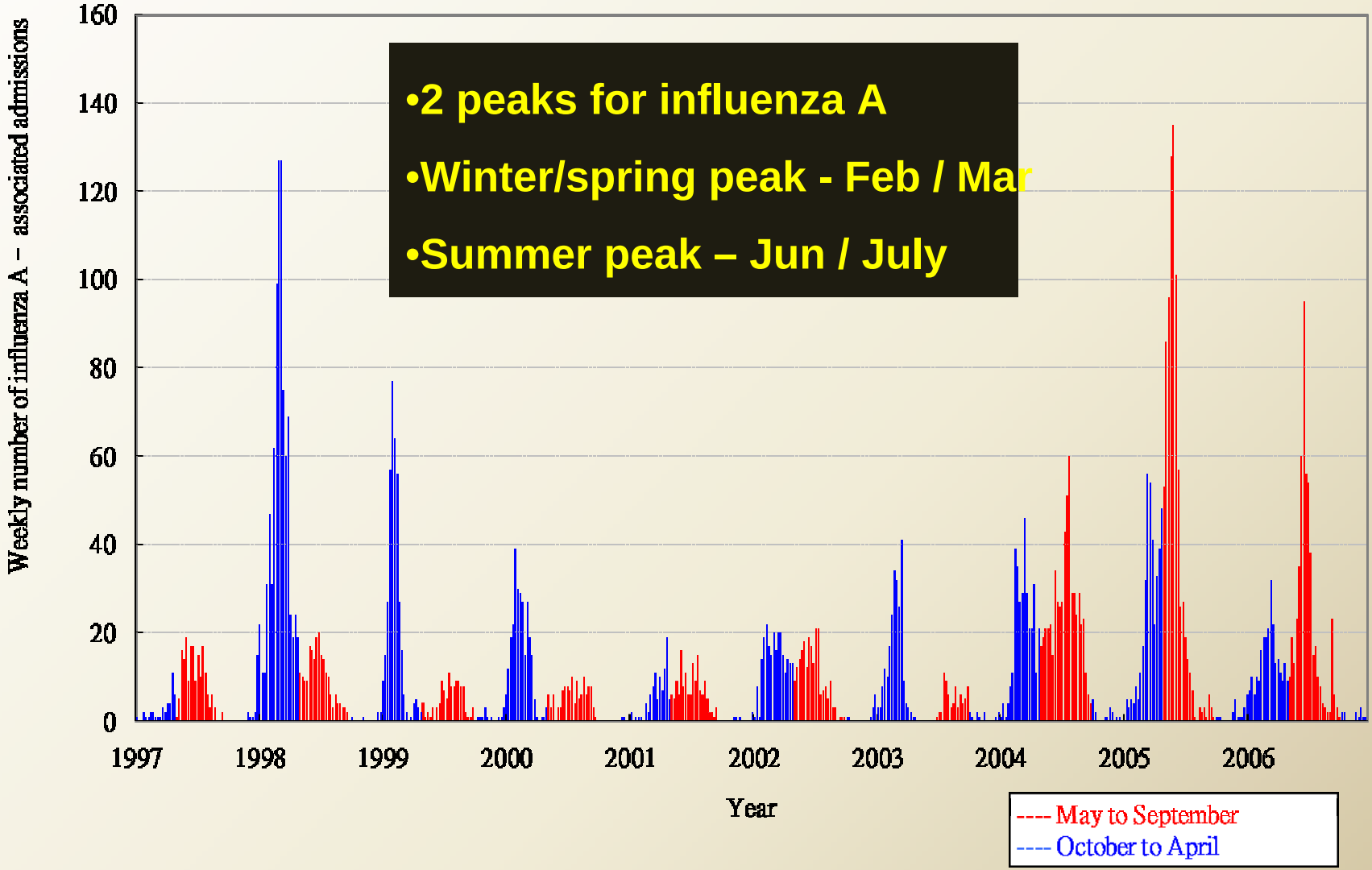
  Flu B: 1462 (19%)

- Flu admission per year:

  Flu A: 244 – 1183 patients

  Flu B: 51 – 268 patients

No. of Influenza A admissions per week, 1997-2006



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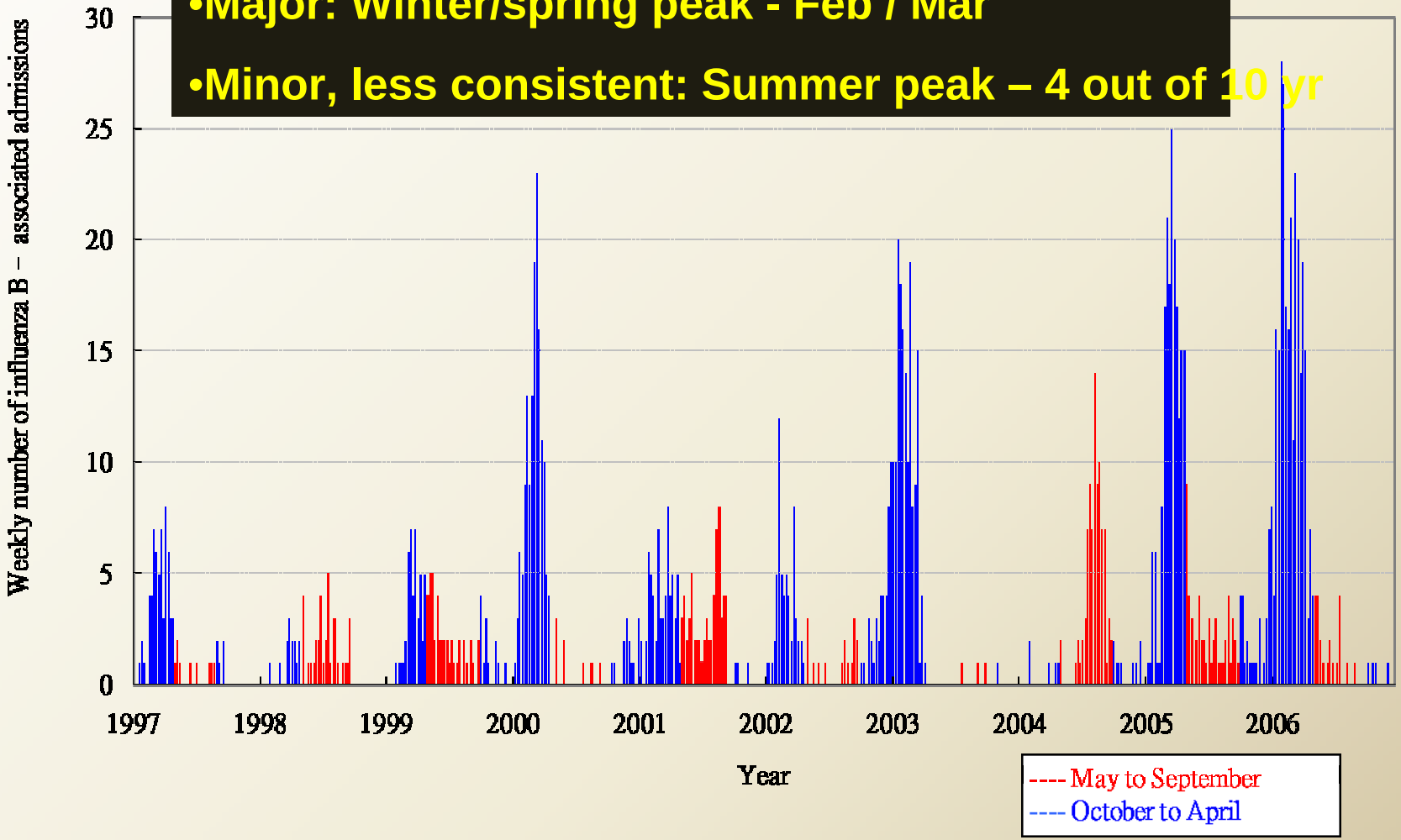
No. of Influenza B admissions per week, 1997-2006

- 1 (2 in some yrs) peak for influenza B
- Major: Winter/spring peak - Feb / Mar
- Minor, less consistent: Summer peak – 4 out of 10 yr



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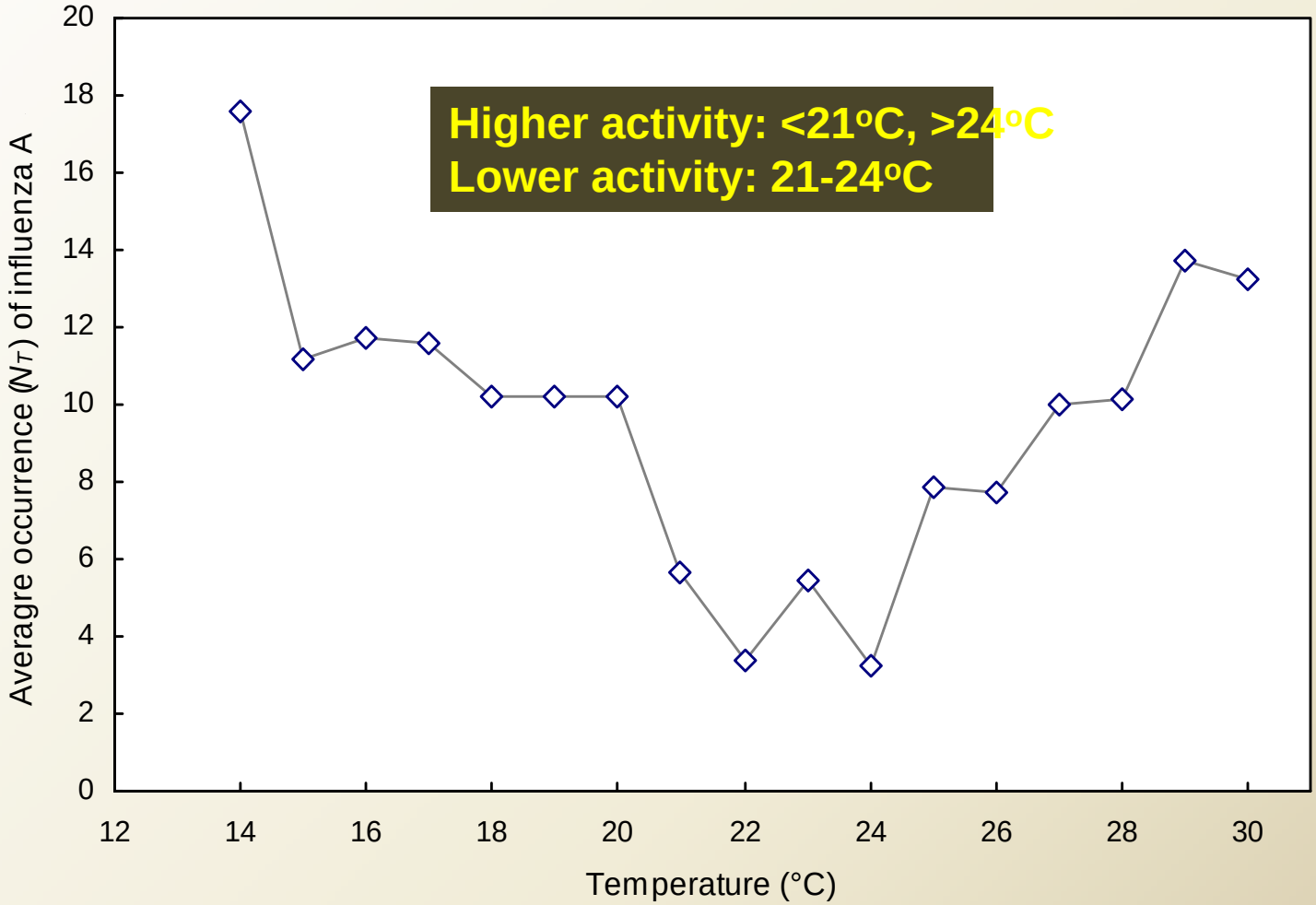
Study Objective 2:

- Correlation between influenza activity and weather conditions in Hong Kong

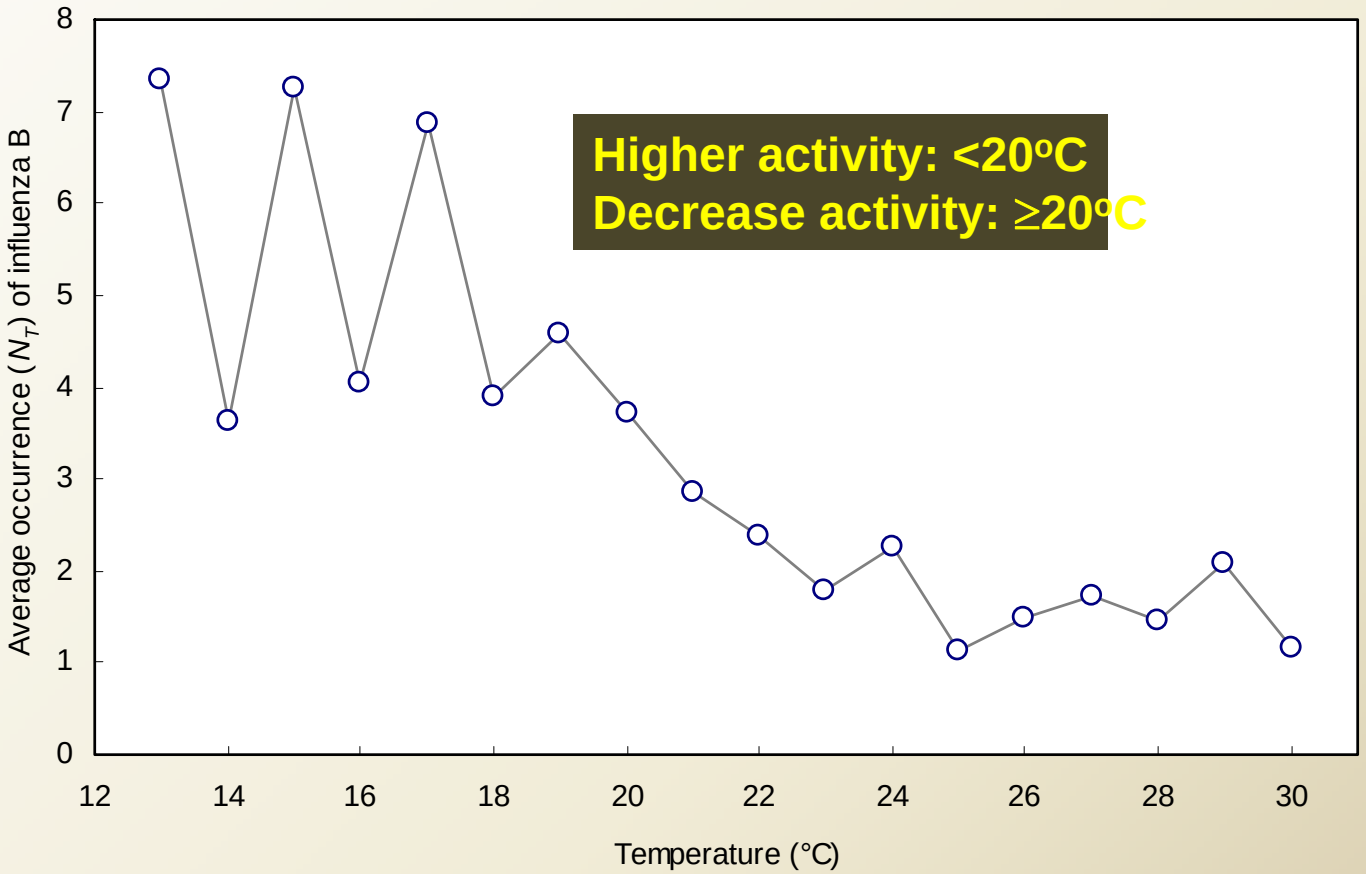
Concept of correlation analysis:

- 1997-2006 influenza admissions in PWH
- Daily temperature & relative humidity recorded at Shatin
- Account for delay in weather change and influenza admission

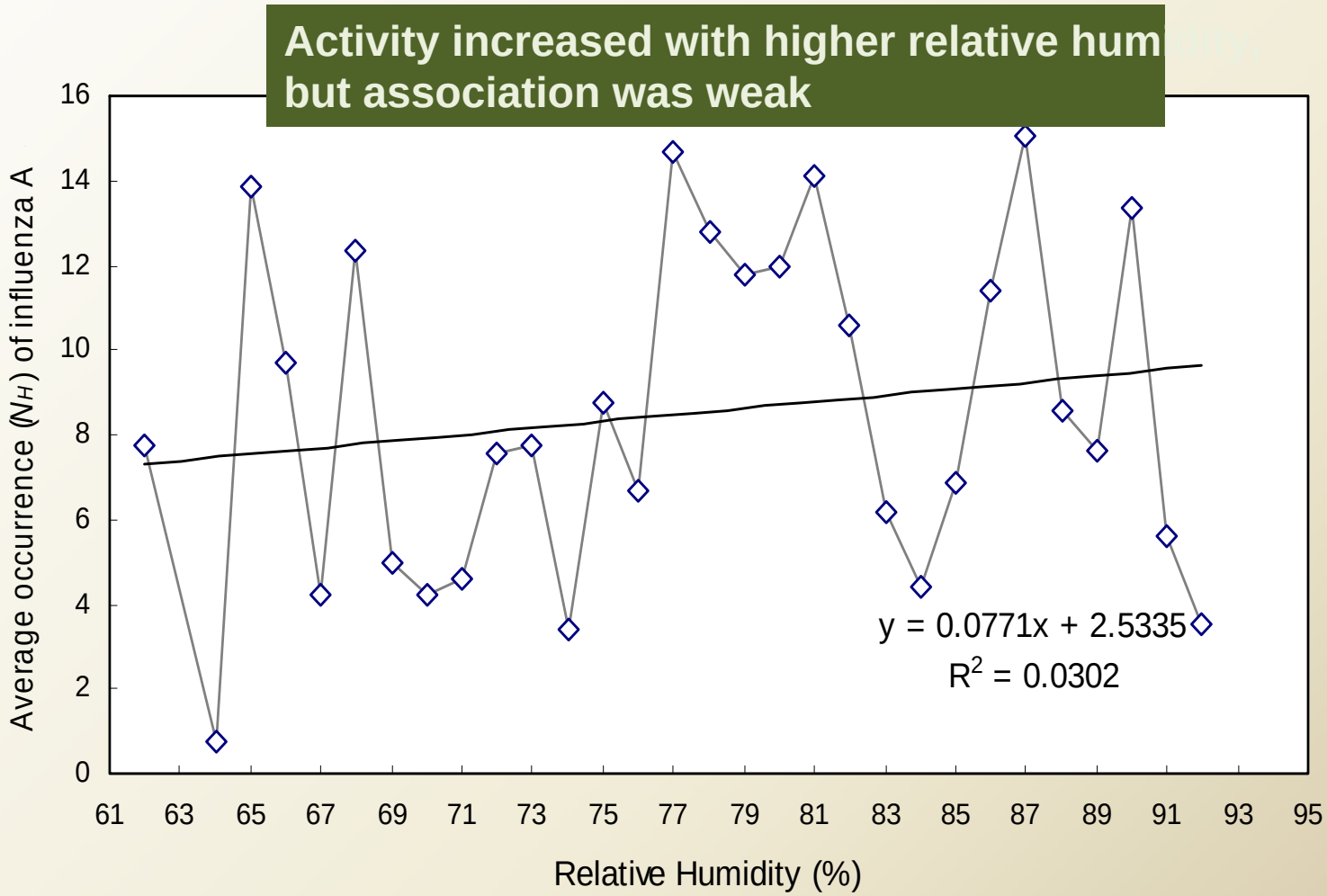
Influenza A and temperature



Influenza B and temperature

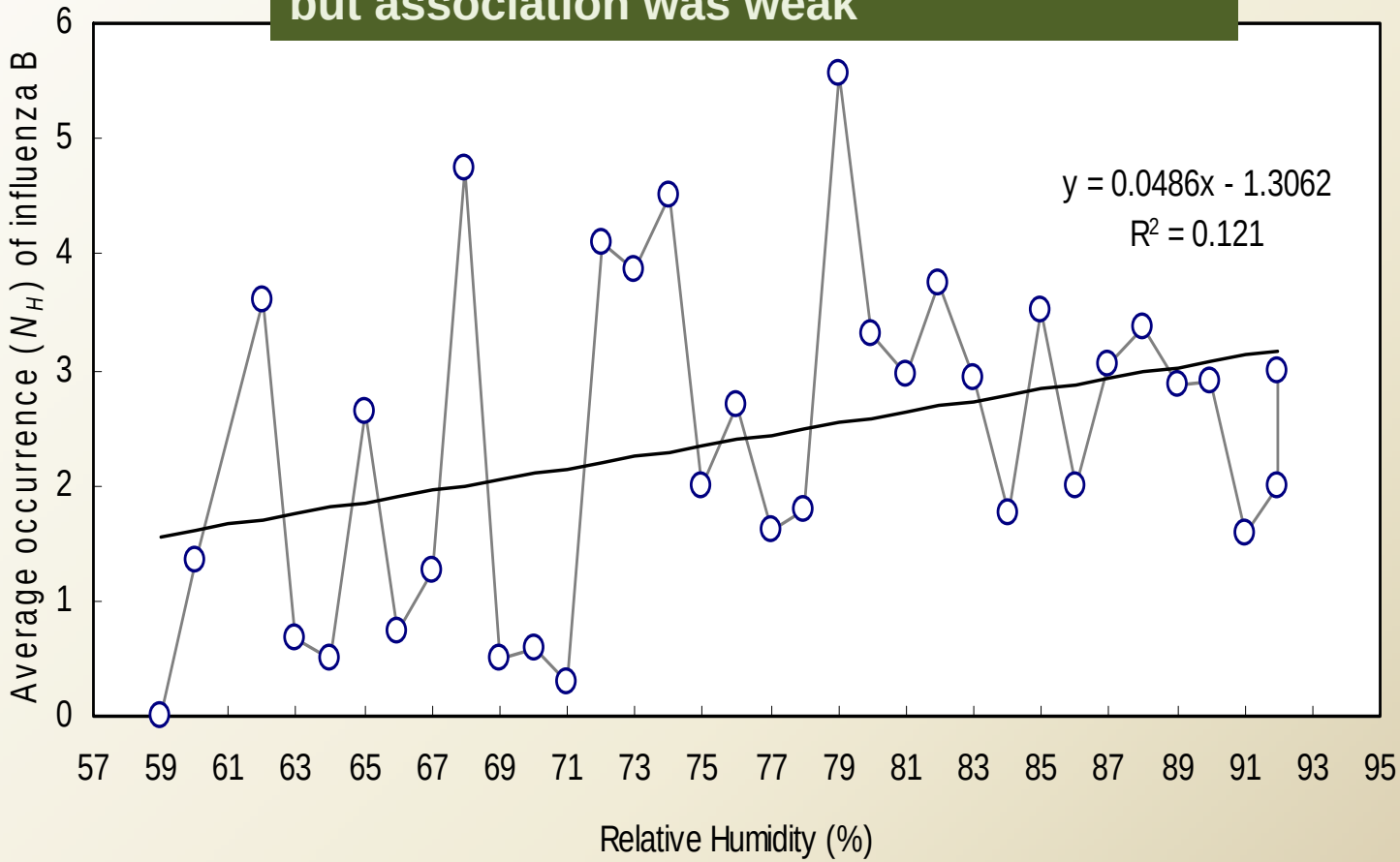


Influenza A and relative humidity

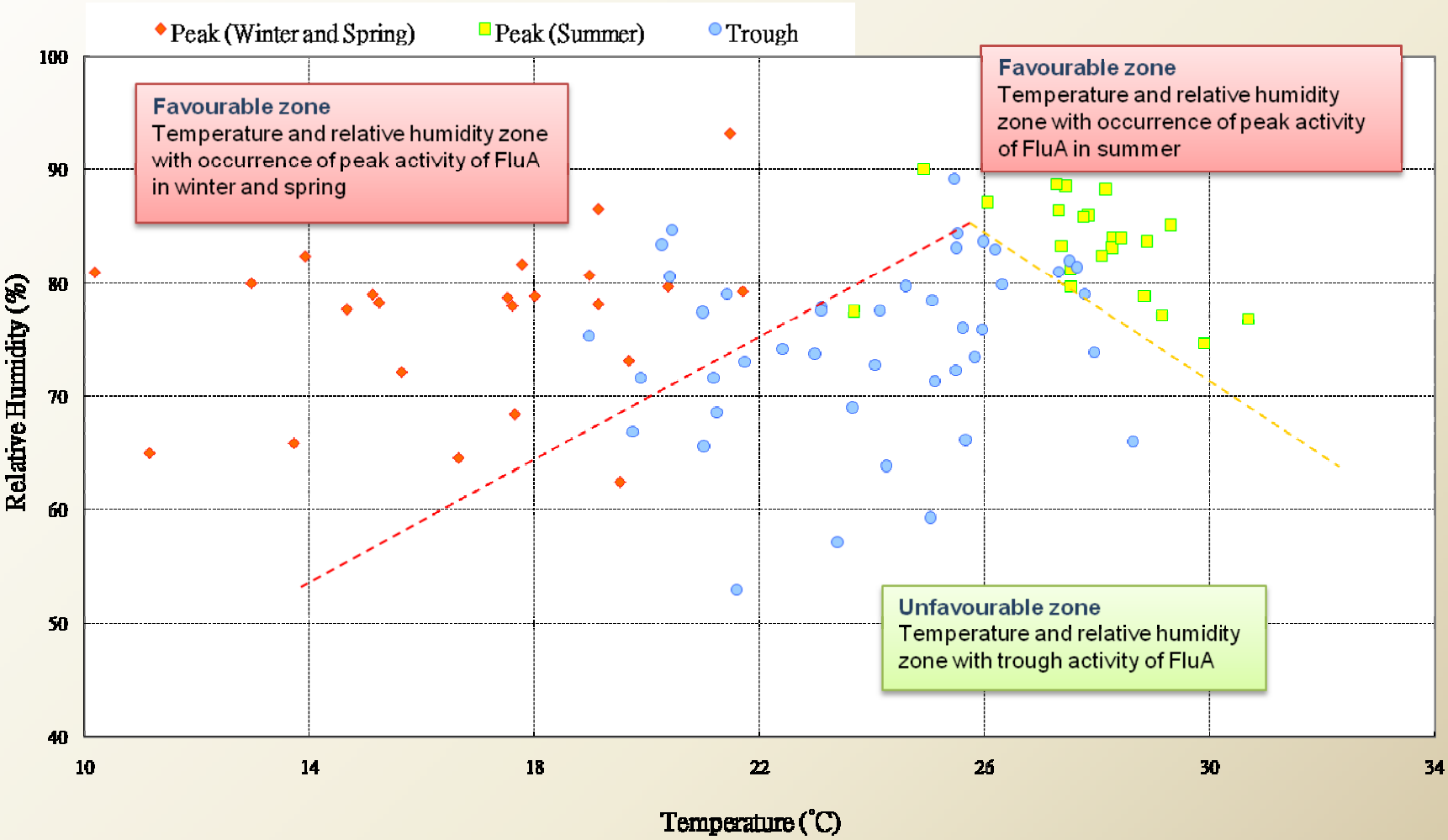


Influenza B and relative humidity

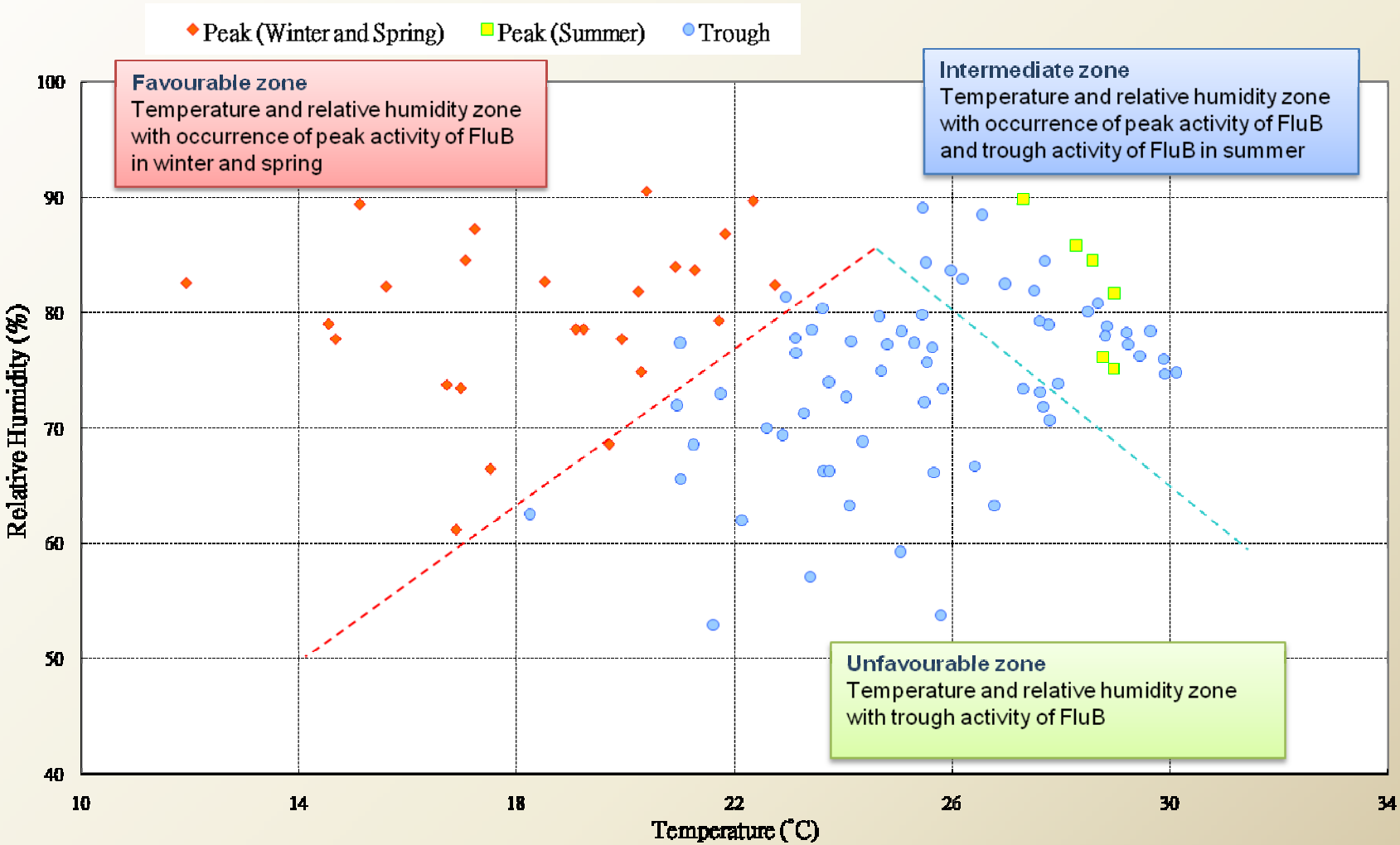
Activity increased with higher relative humidity, but association was weak



Favourable climatic zone for influenza A

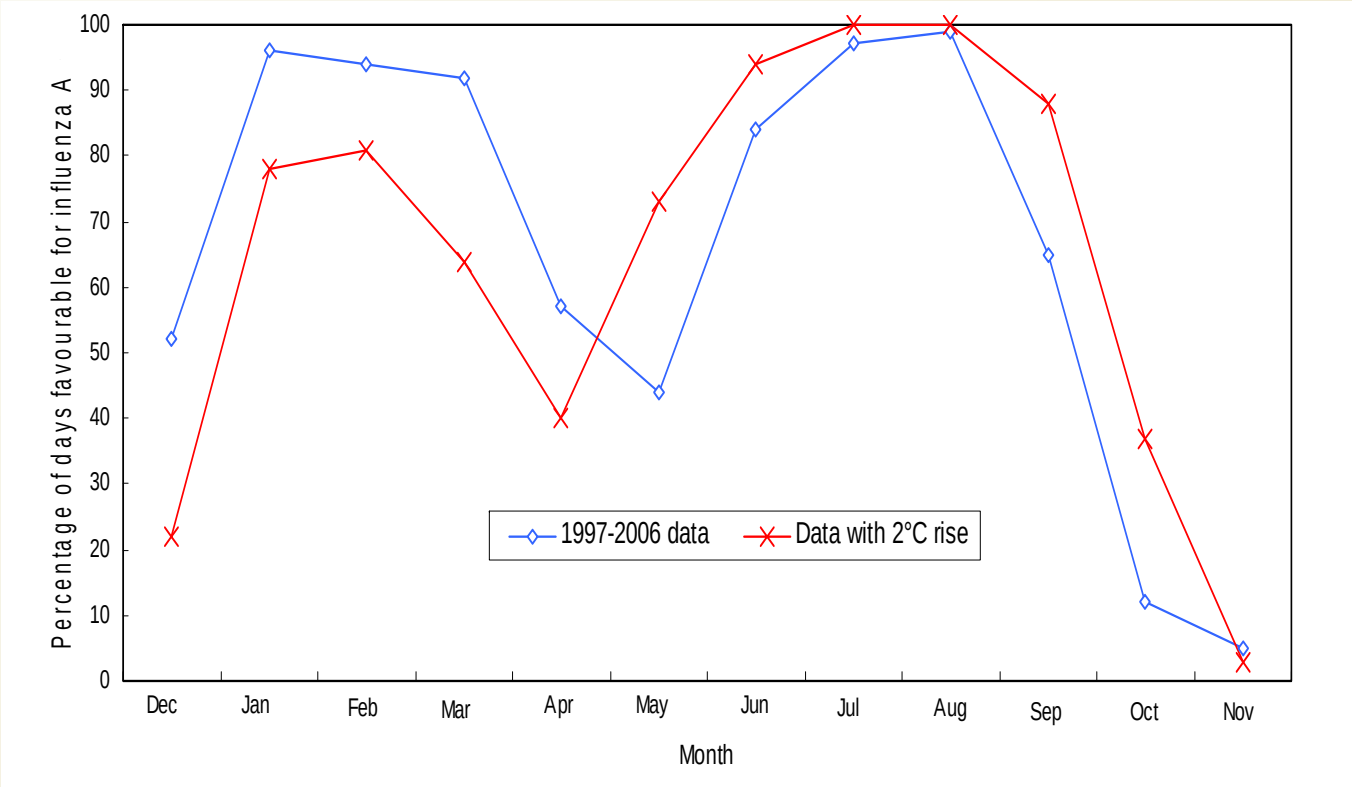


Favourable climatic zone for influenza B



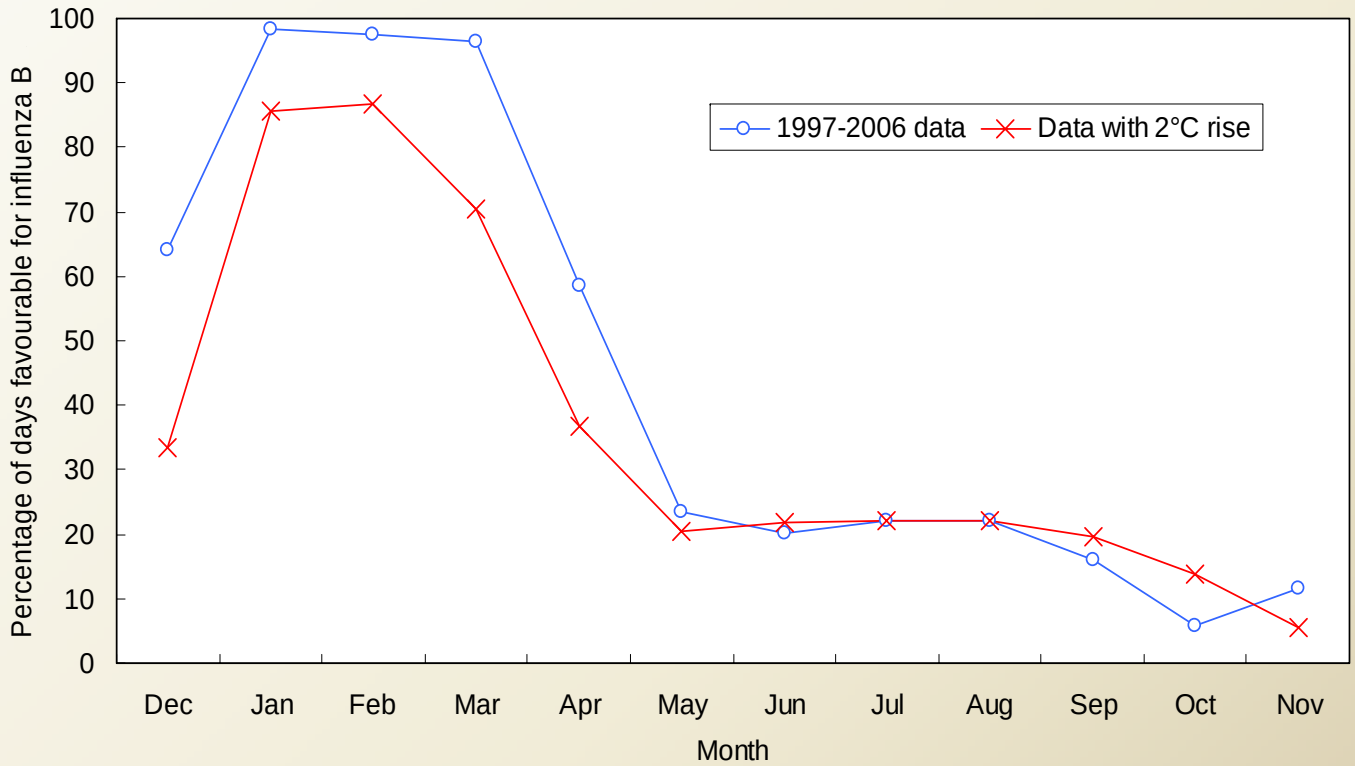
Projection with 2º C rise in temperature on influenza A favourable da

Flu A favourable days: Dec-Apr : decrease – 78% > 57%
May-Nov: increase – 58% > 71%



Projection with 2º C rise in temperature on influenza B favourable d

Flu A favourable days: Dec-Apr : decrease – 83% > 62%
May-Nov: no major change – 17% > 18%

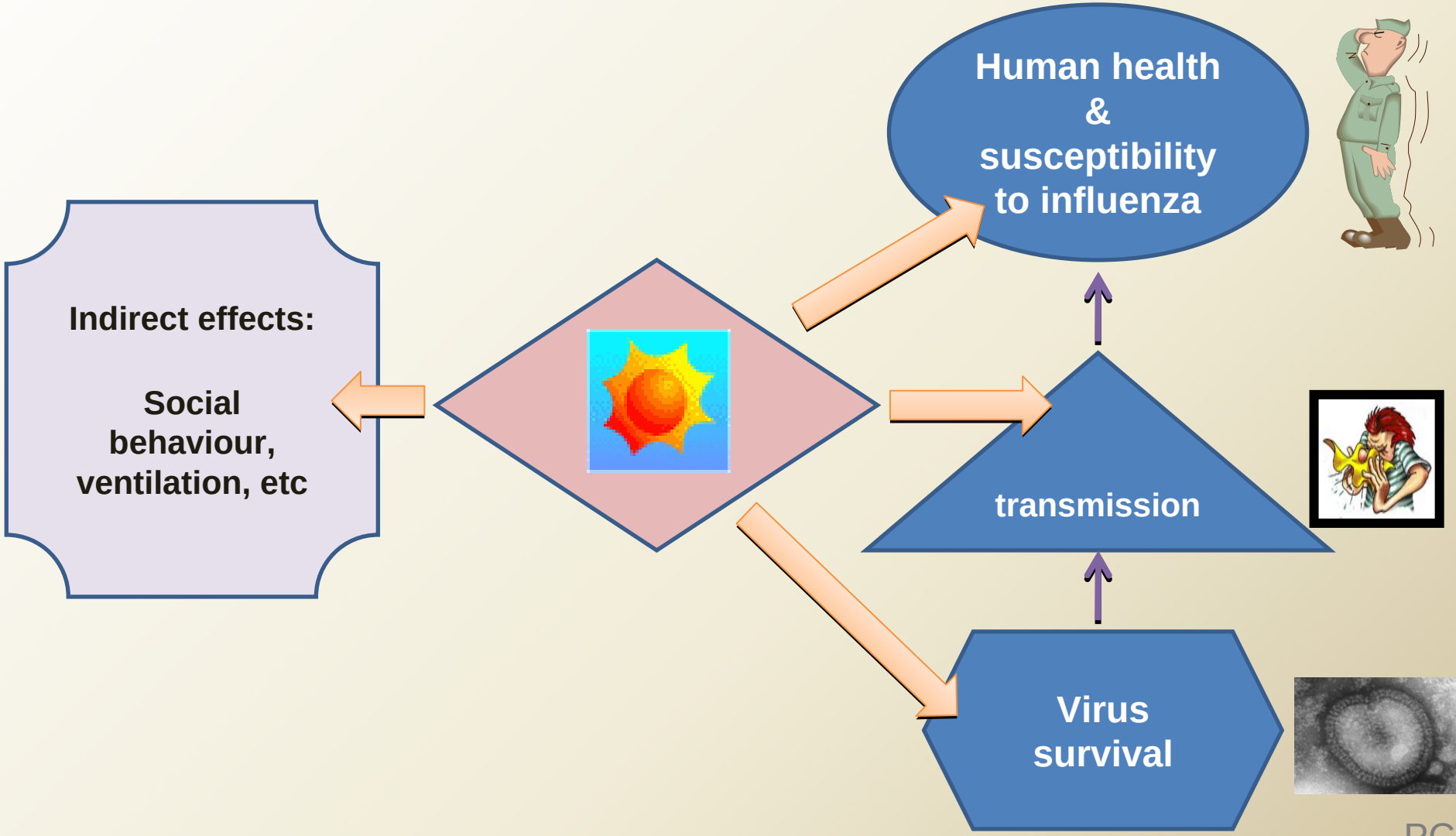


Key findings :

- Influenza A carried a higher health impact than influenza B
- Two seasonal peaks were observed in Hong Kong, but with different patterns for influenza A and B
- Correlation between influenza activity and temperature and relative humidity was observed, further application on this aspect will be explored

Interpretation & hypothesis :

Our observation represents the overall effects of a complex interaction



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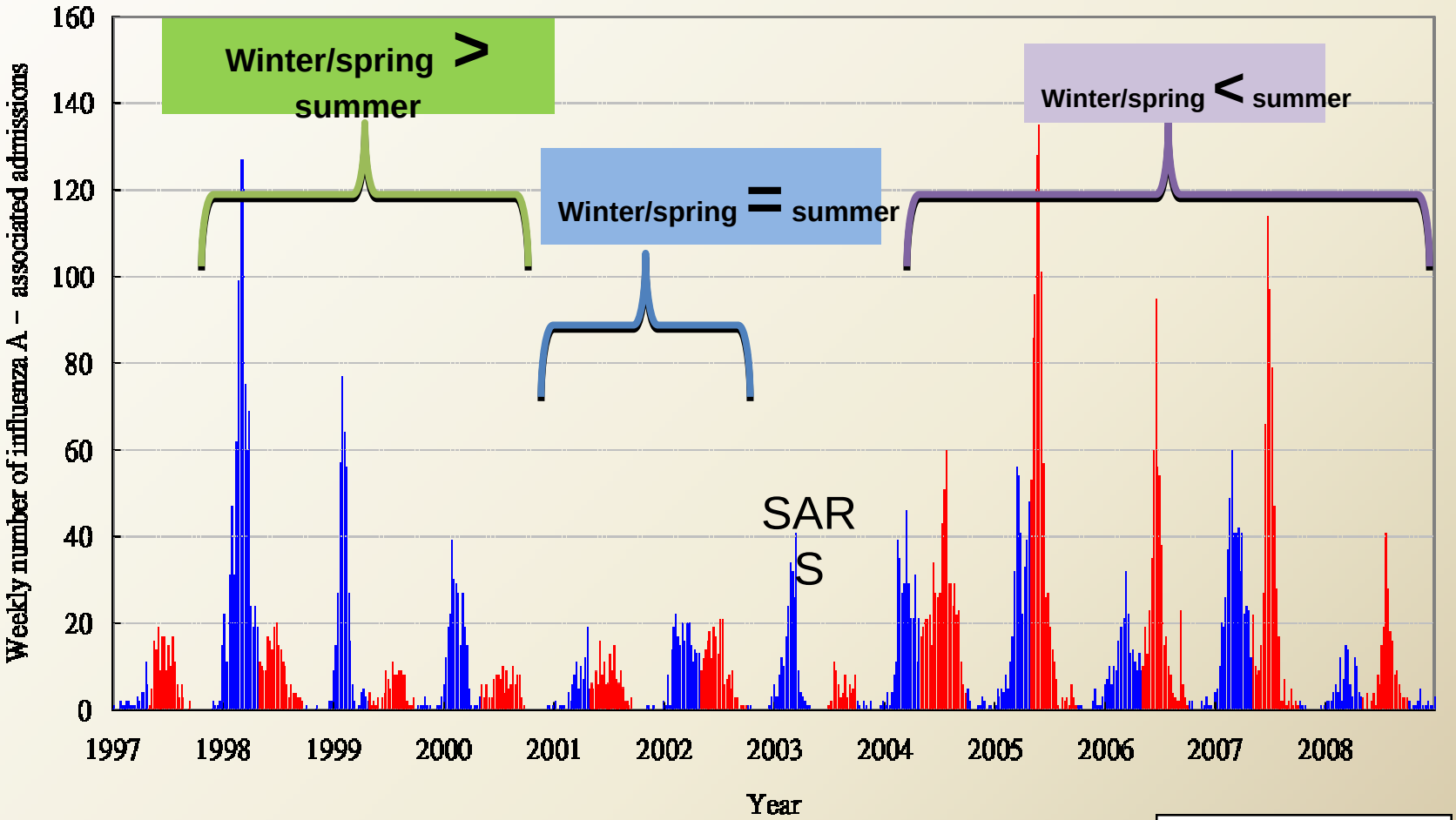
Immediate key message for public :

- Best time for vaccination in Hong Kong ??
- Does it matter if you vaccinate earlier or later ??

Trend of change in relative magnitude of winter/spring and summer peak for influenza A



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Immediate key message for public :

- November –December is the best time for vaccination in Hong Kong
- Two seasonal peaks in Hong Kong
- Vaccine takes 1-3 weeks to effect, maximum protection for a few months
- Receiving vaccine too early may not protect summer peak which is getting more severe in Hong Kong
- Receiving vaccine too late miss protection for winter/spring peak

Immediate key message for public :

- Weather of this summer in Hong Kong is expected to be normal
- Public is advised to pay attention to personal and public hygiene in the coming months