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Estacionalidad de Virus Sincicial Respiratorio en Latinoamérica y El Caribe

OPS/OMS, Washington, DC

Mauricio Cerpa
Luis Bonilla (Método ARIMA)



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Antecedentes

- América Latina y el Caribe son especiales!
 - Uso de la inmunofluorescencia y RT-PCR.
 - Vigilancia integrada de influenza, VSR, parainfluenza y adenovirus
- Porcentaje de positividad a VSR, puede variar por:
 - La estructura de los sistemas de vigilancia
 - Capacidad diagnostica
 - Grupos objetivos de vigilancia
 - Datos de vigilancia, no de estudios de investigación



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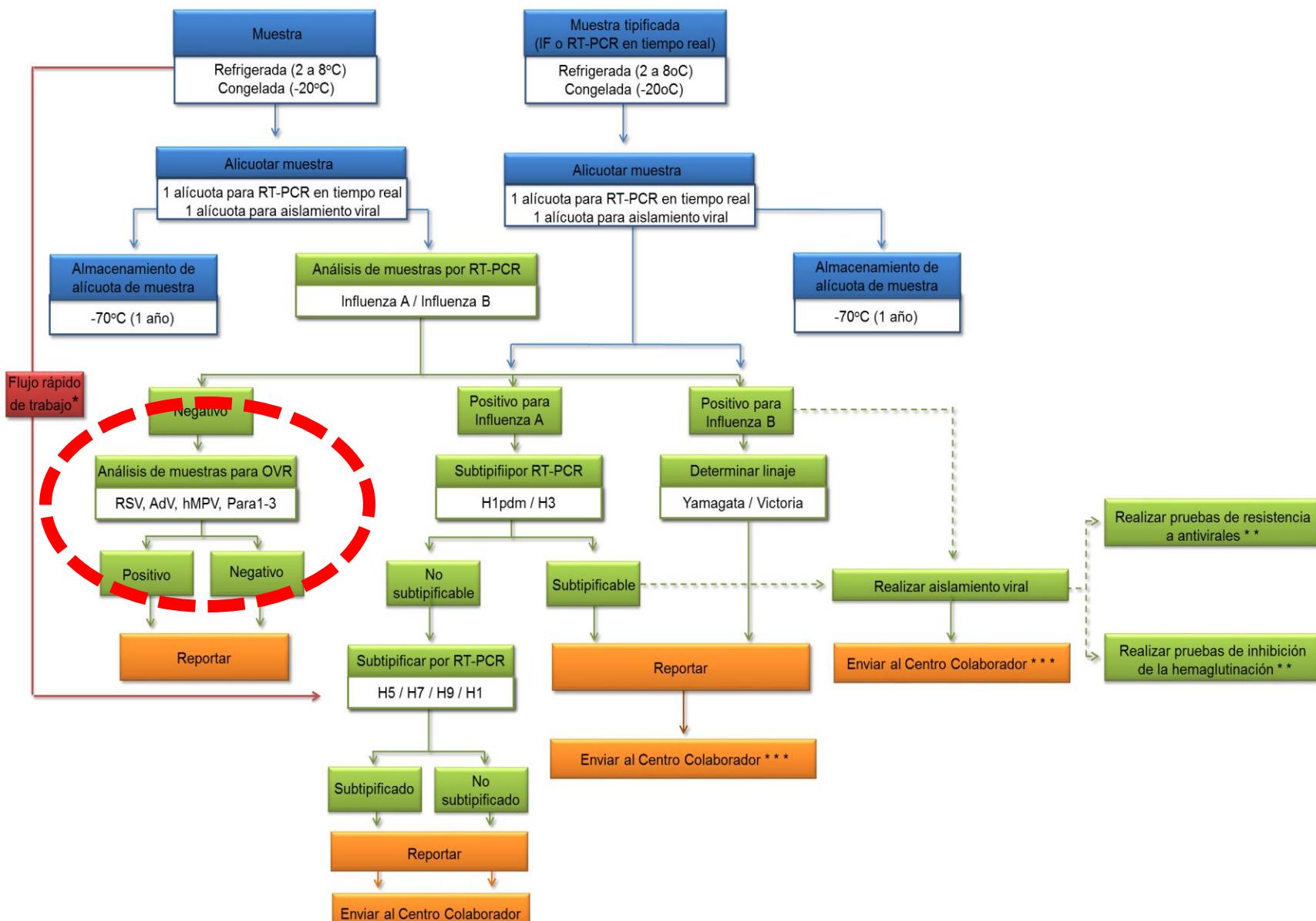
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INFLUENZA

Algoritmo de Detección y Flujo de Muestras



■ * Flujo rápido de la muestra para el NIC debe ser considerado en situaciones de casos inusuales (ej. casos de influenza aviar)

■ ** Aislamiento viral y pruebas de resistencia a los antivirales o IH serán realizados según la capacidad del laboratorio

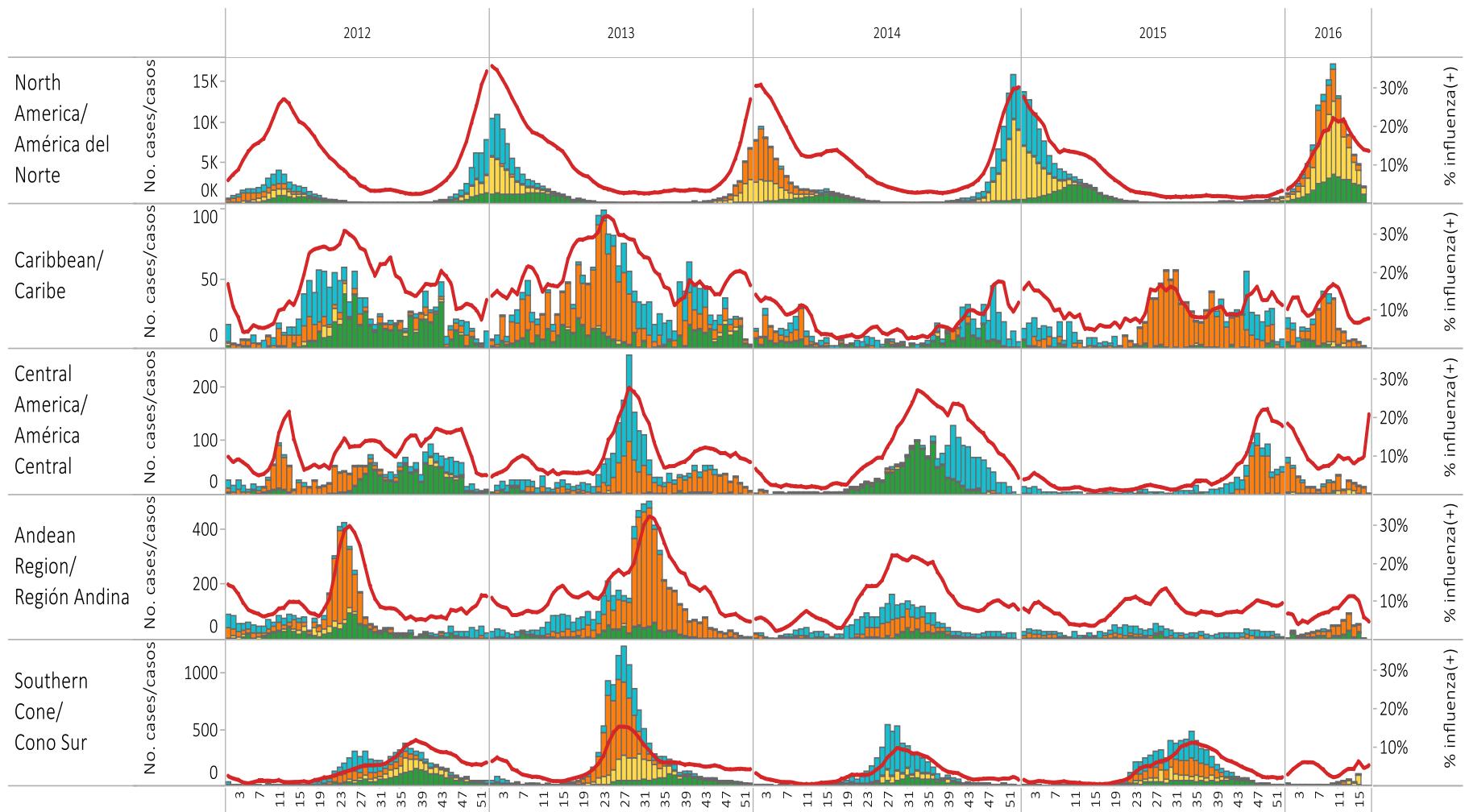
■ *** Selección de muestras subtipificadas para envío al Centro Colaborador según los criterios en el documento



Vigilancia de influenza por tipo y subtipo en las Américas 2012-2016

Influenza viruses/Virus influenza

- Influenza A(H3N2)
- Influenza A(H1N1)pdm09
- Influenza A Not Subtyped/No subtipificado
- Influenza B
- Influenza A not subtypeable/no subtipificada..
- % Influenza

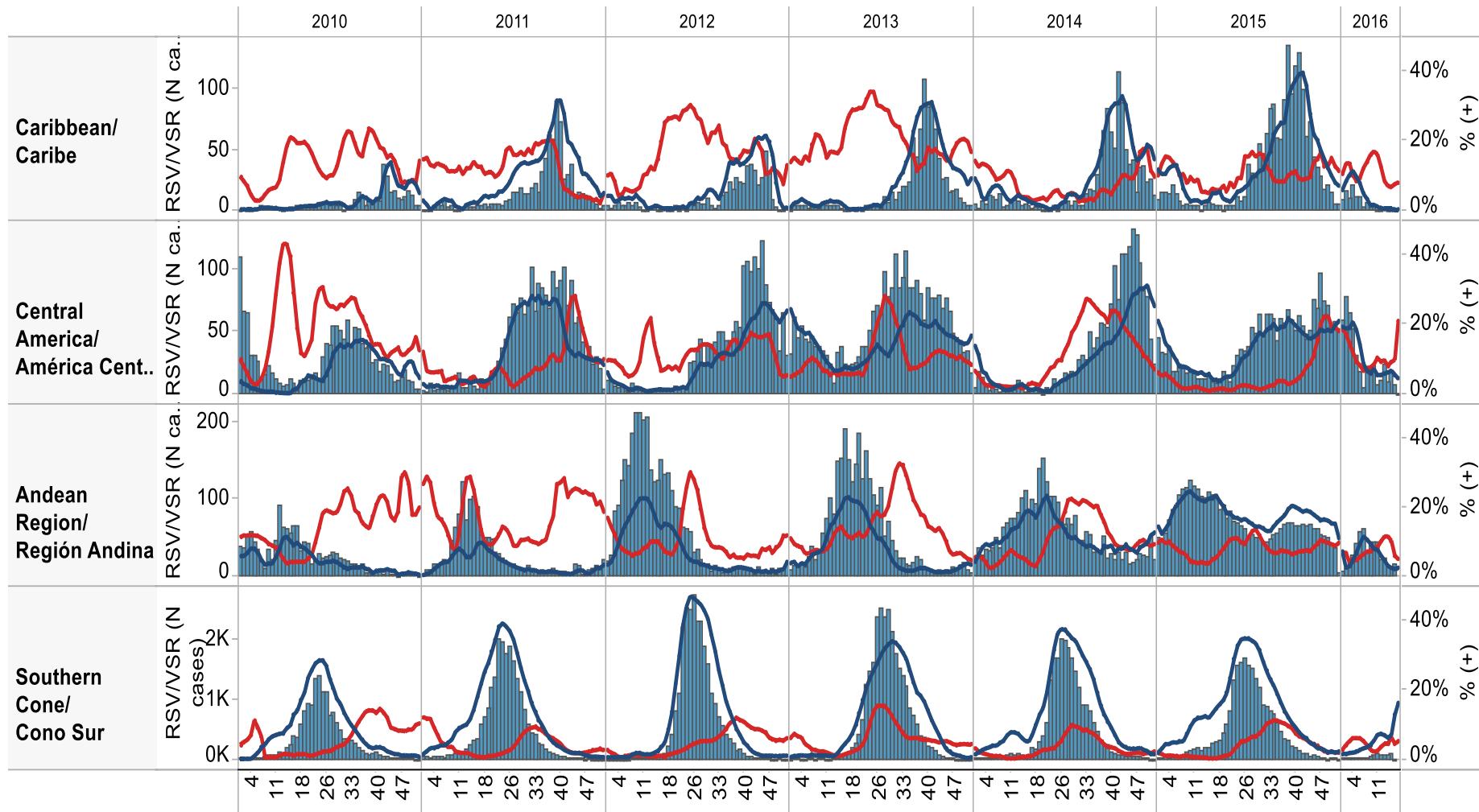




Vigilancia de VSR en las Américas Latina y el Caribe 2010-2016

Respiratory viruses/ Virus respiratorios

- RSV/VSR (n cases)
- % influenza(+)
- % RSV/VSR (+)





1- Estimación de Líneas Basales - Alineación de Picos/WHO

2- ARIMA

Central America	Costa Rica
	El Salvador
	Guatemala
	Honduras
	Nicaragua
	Panama
Caribbean	CARPHA
	Barbados
	Cuba
	Dominican Republic
Andean	Bolivia - CENETROP Sta. Cruz
	Bolivia - INLASA La Paz
	Colombia
South Cone	Ecuador
	Peru
	Argentina
	Chile
	Paraguay
	Uruguay



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VSR – Análisis Series Temporales



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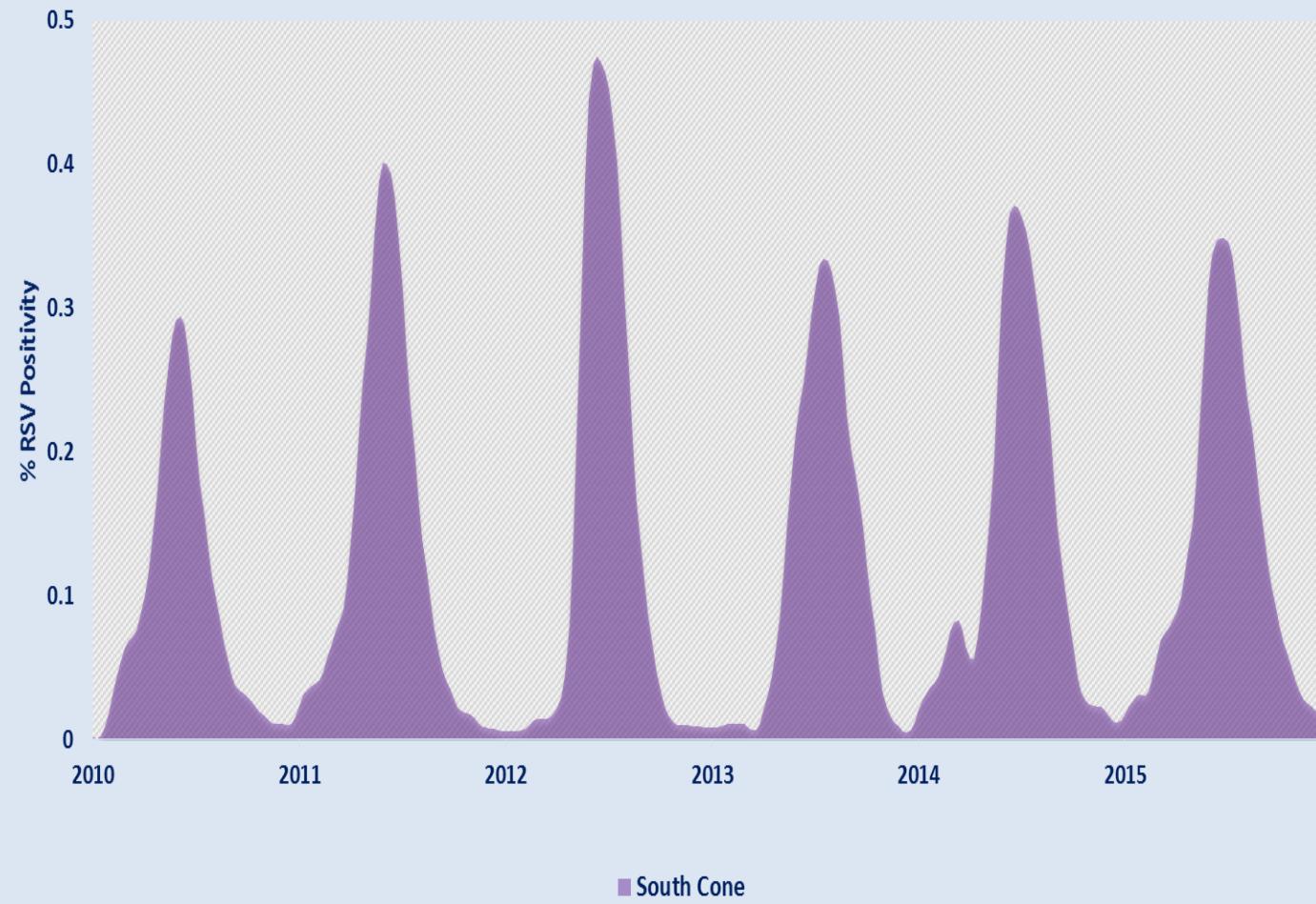
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Smoothing (T4253H) for % RSV Positivity in Las Americas by Region



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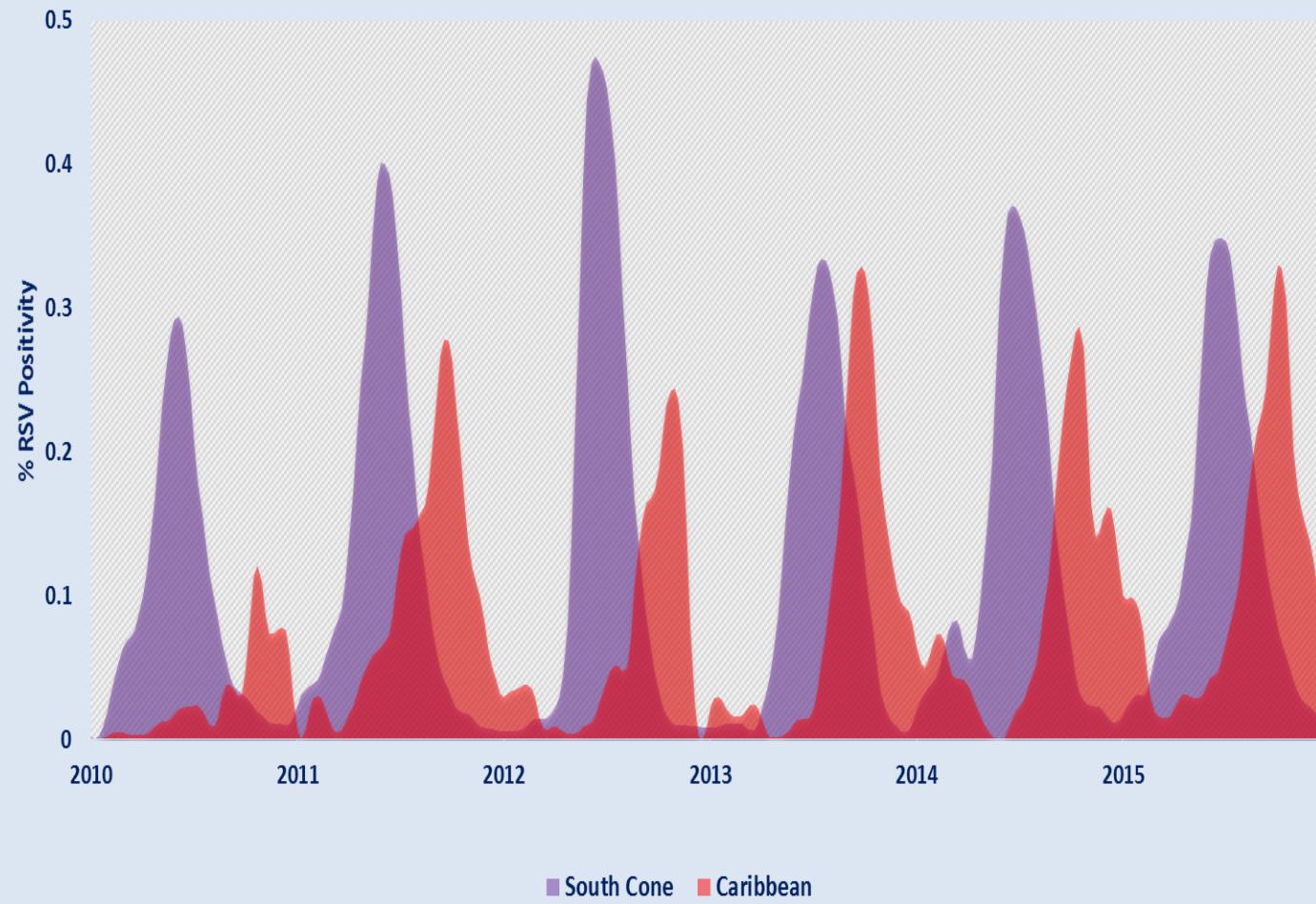
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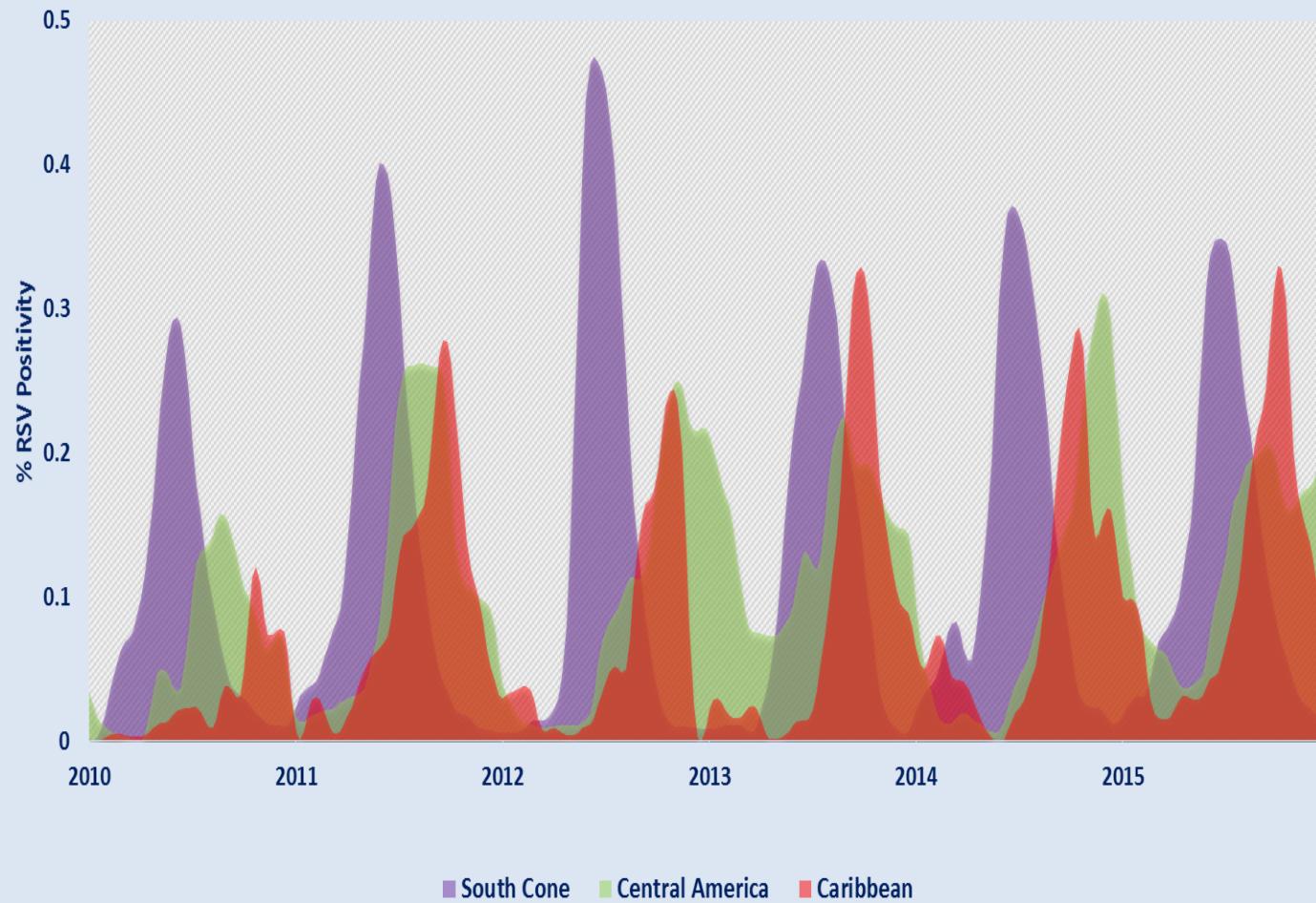
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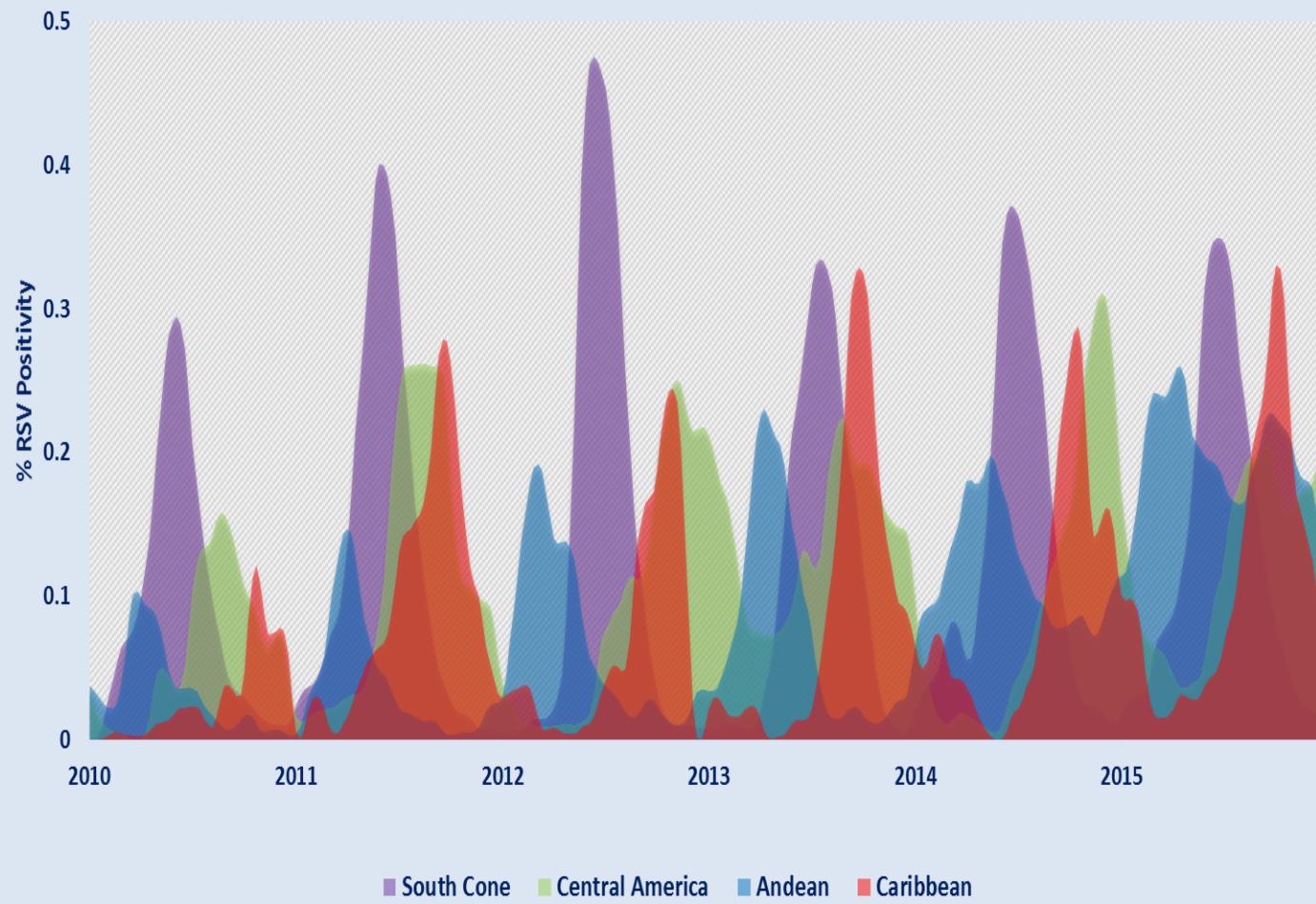
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Estimación de líneas basales (OMS)



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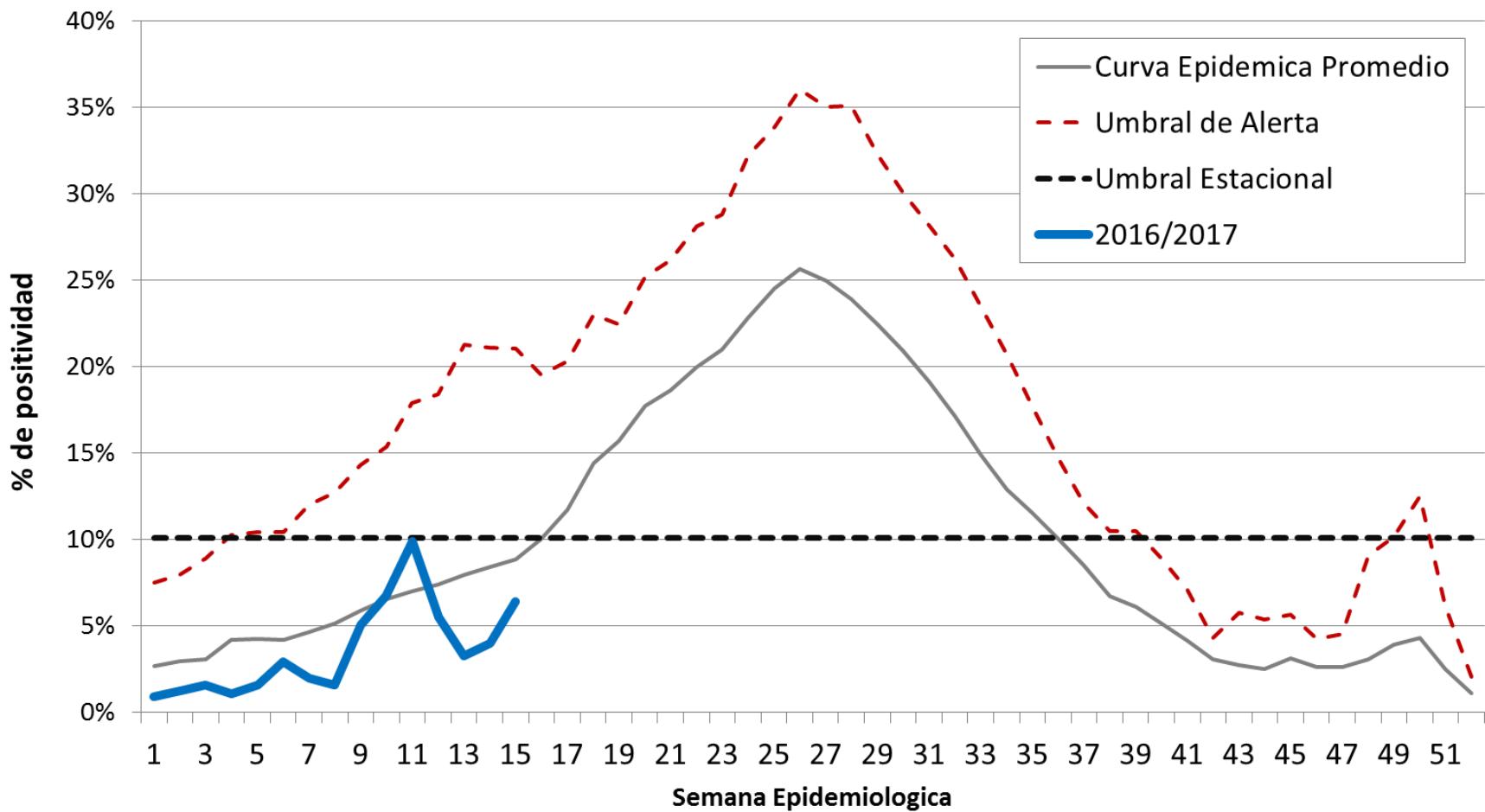
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SE 16-36 (21 semanas)
Pico SE 26 (inicio de julio) (25%)

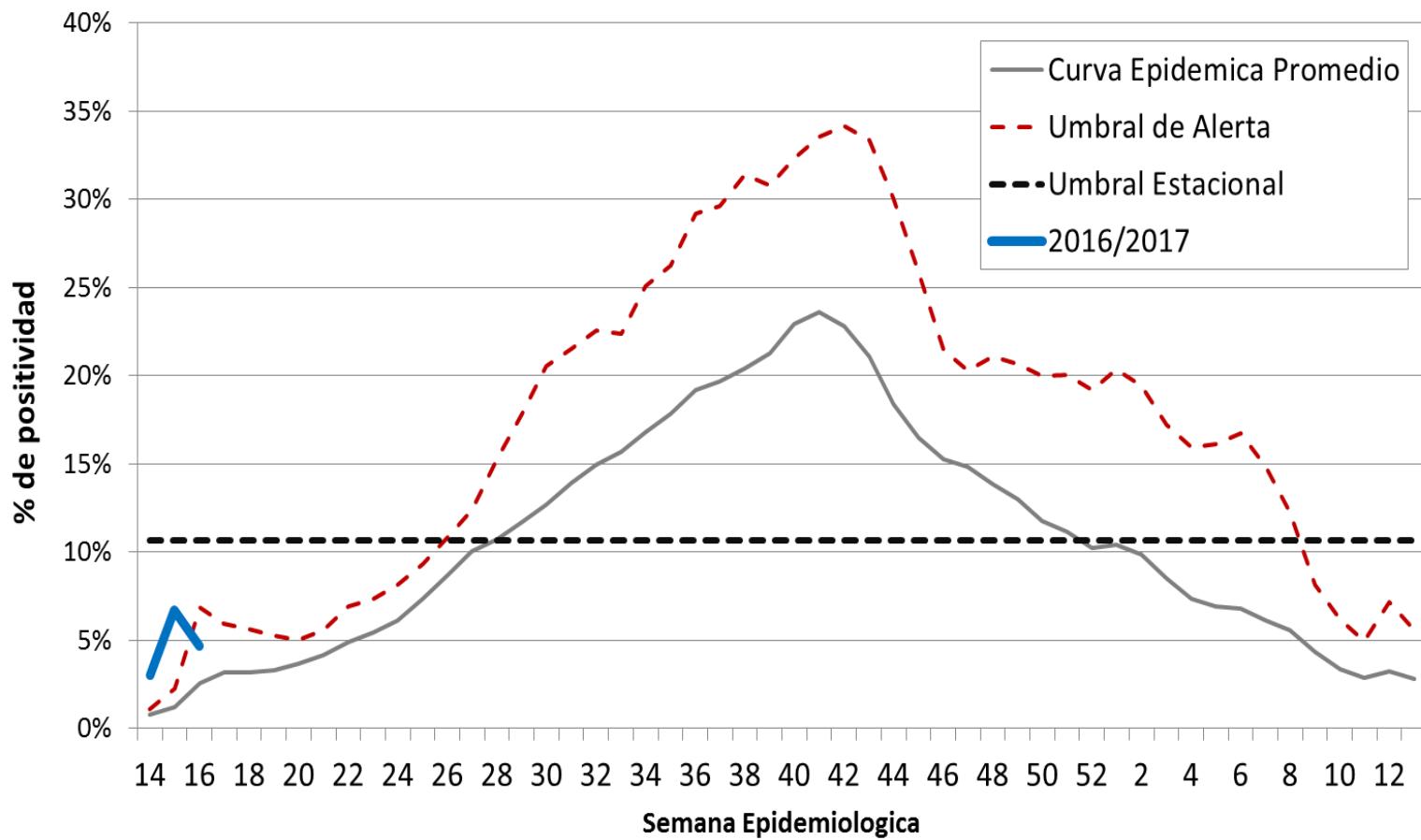
Vigilancia VSR: Cono Sur





SE 28-51 (24 semanas)
Pico SE 41 (inicio de octubre) (23%)

Vigilancia VSR: América Central y Caribe



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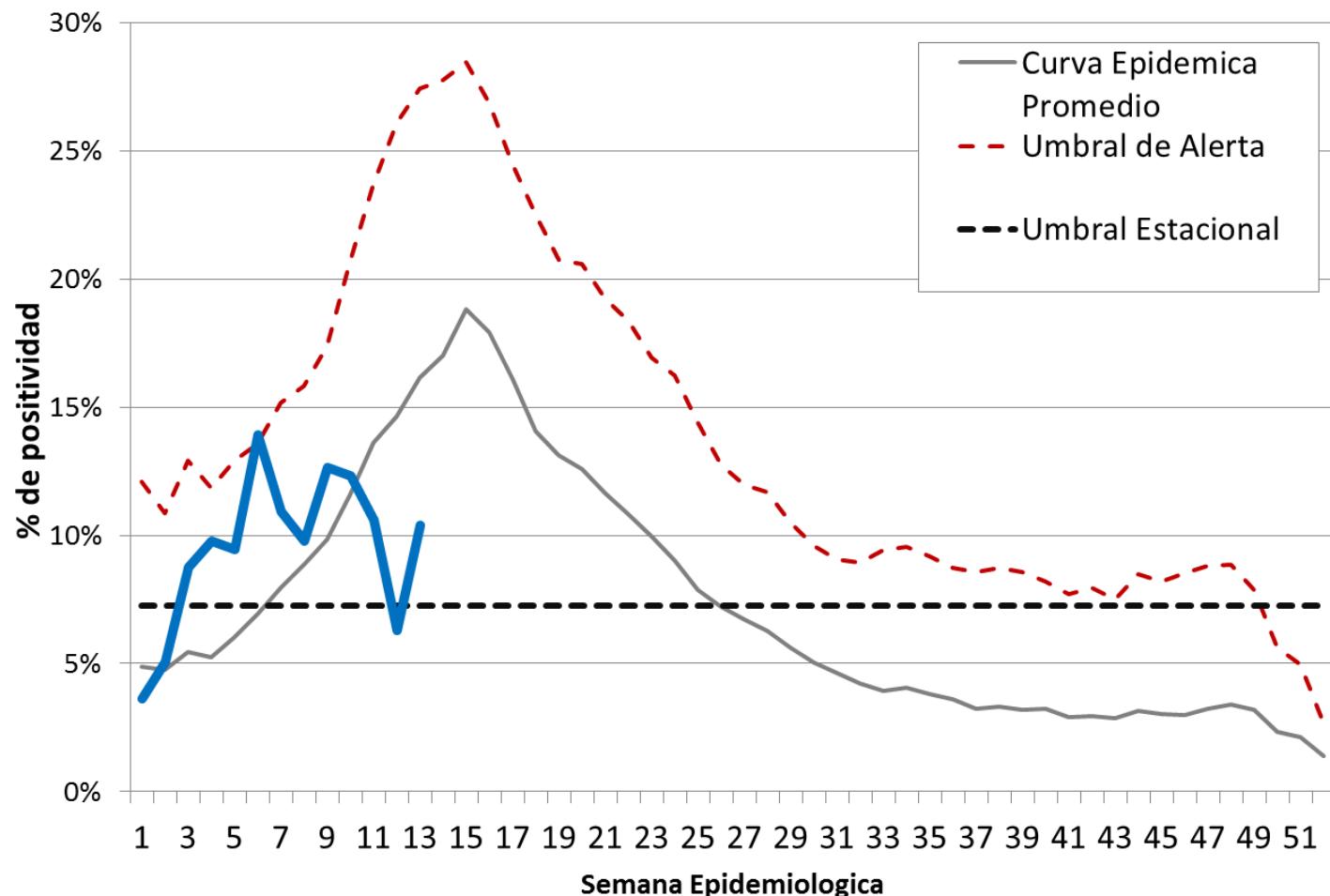
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SE 6-26 (24 semanas)
Pico SE 15 (mediados de abril) (19%)

Vigilancia VSR: Region Andina

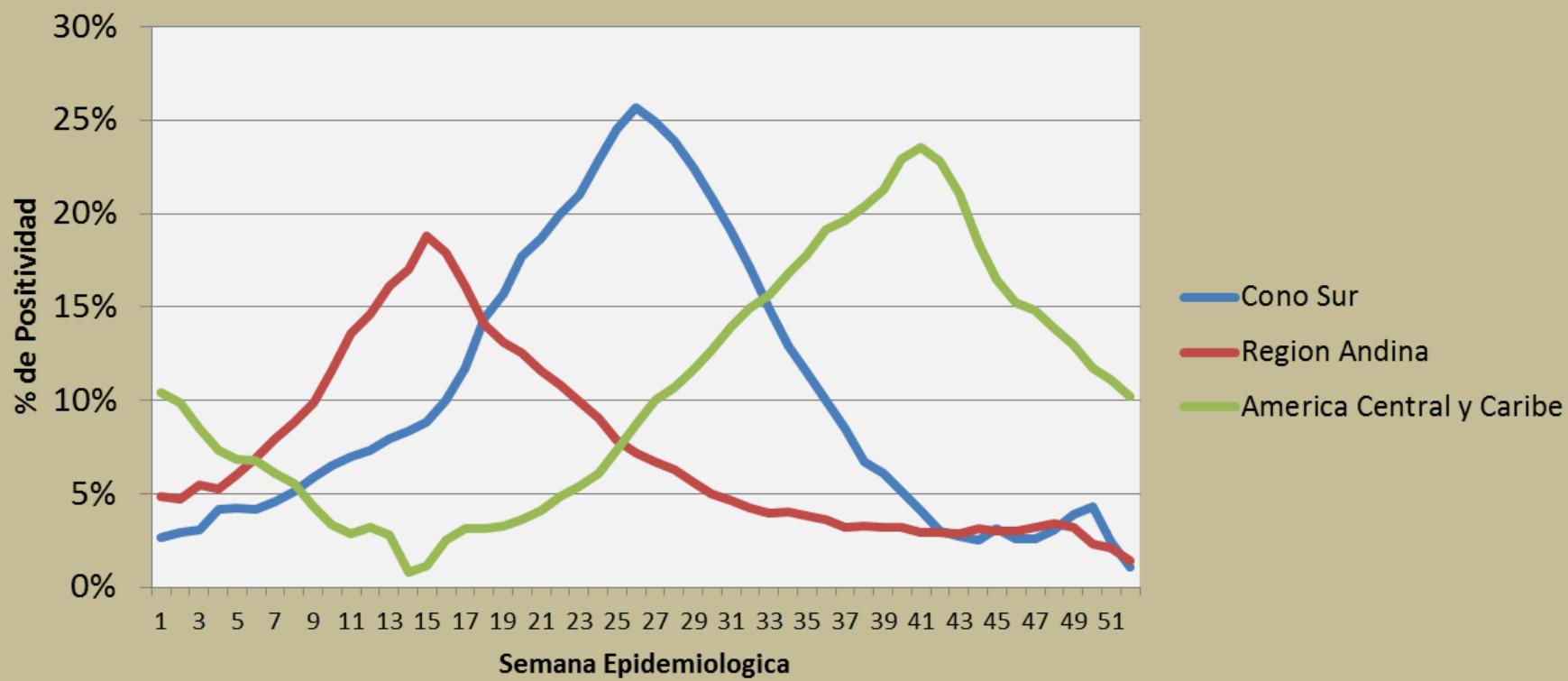


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VSR - Curvas Epidemicas Promedio por sub-regiones (2010-2015)



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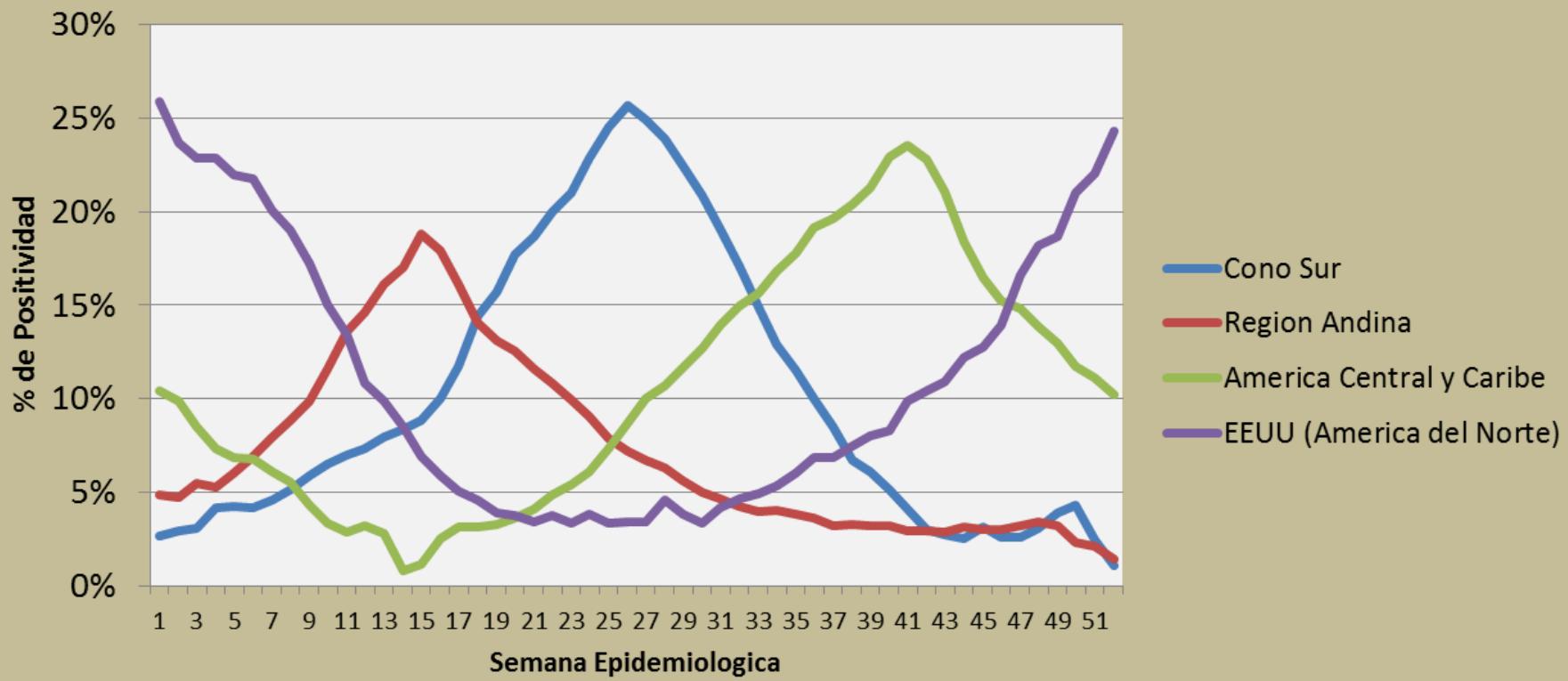
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Análisis Espectral



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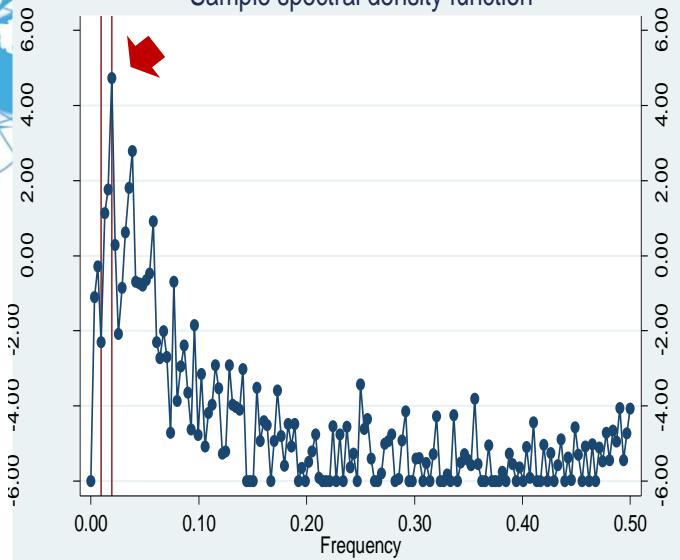
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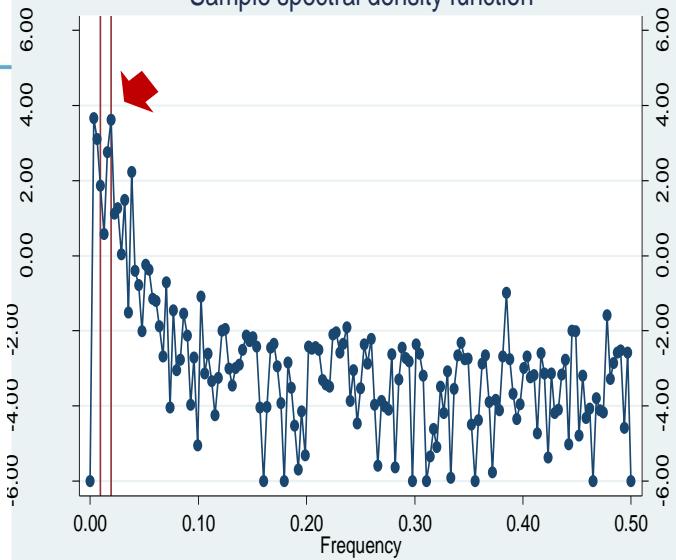
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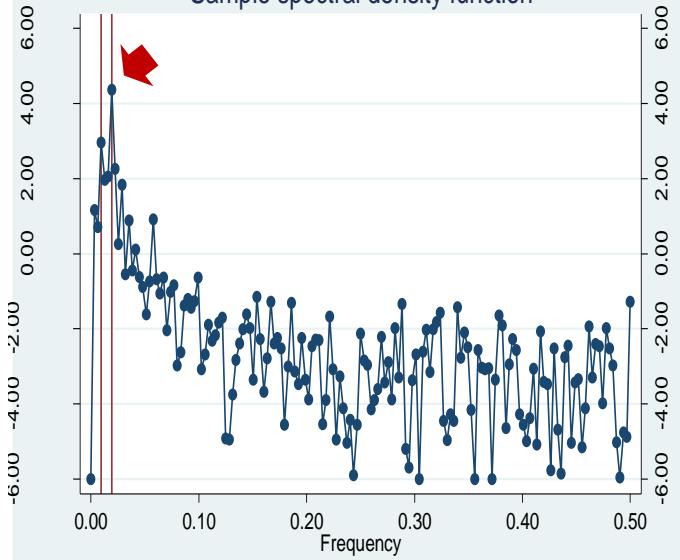
Sample spectral density function



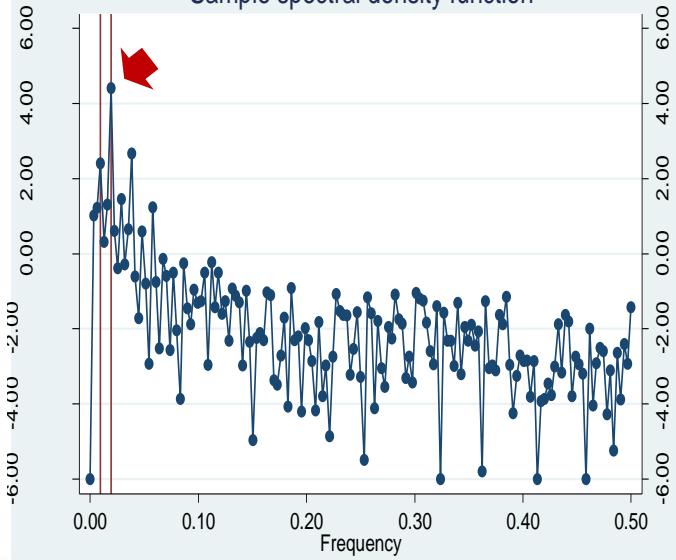
Sample spectral density function



Sample spectral density function



Sample spectral density function





Función de Autocorrelación



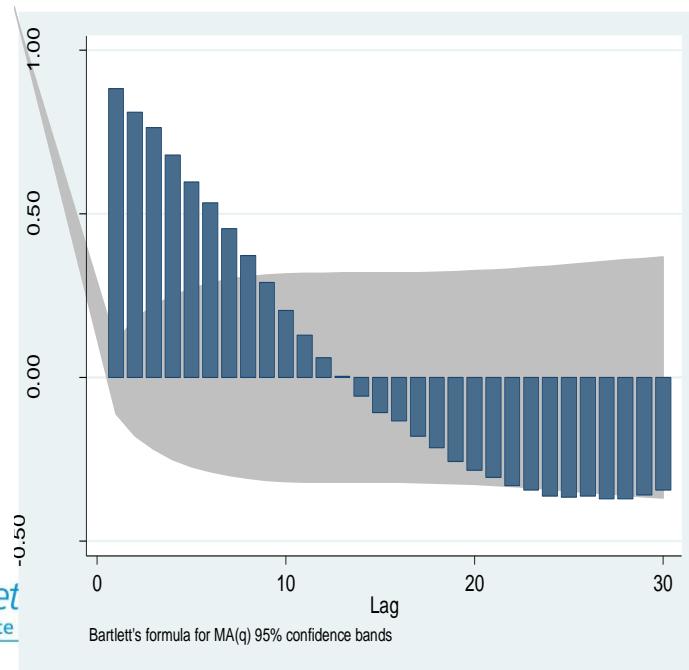
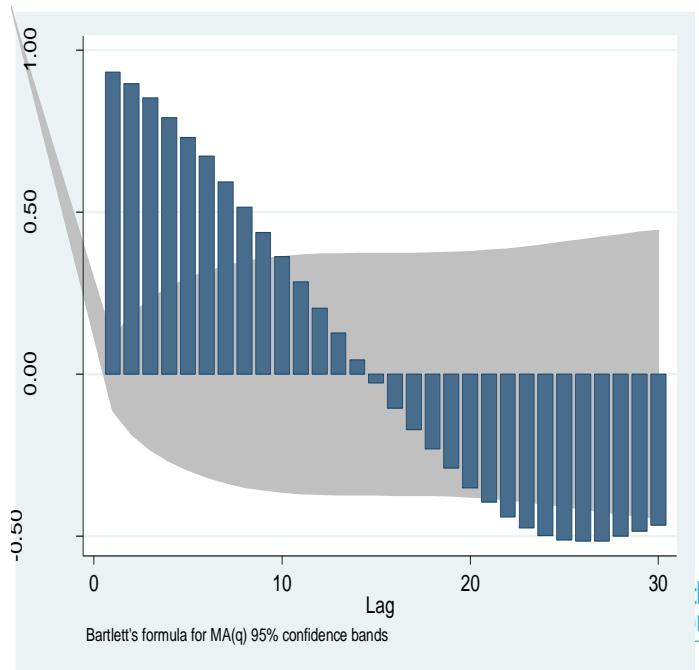
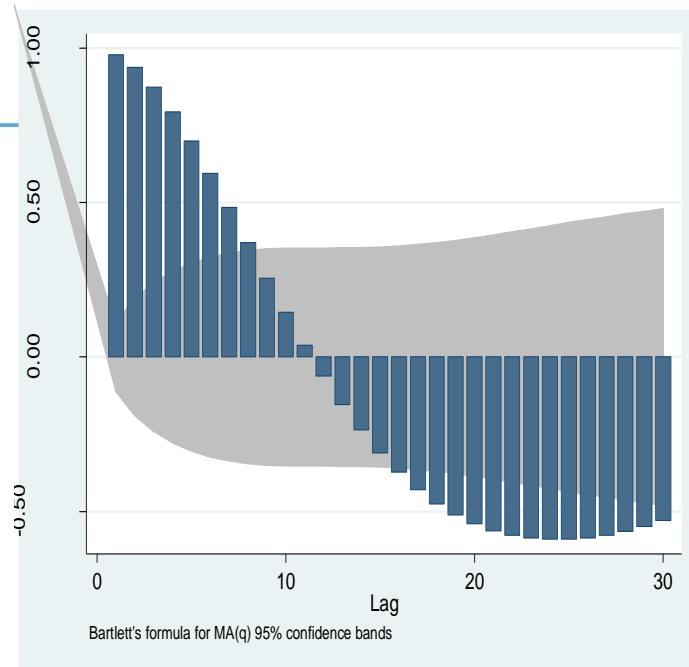
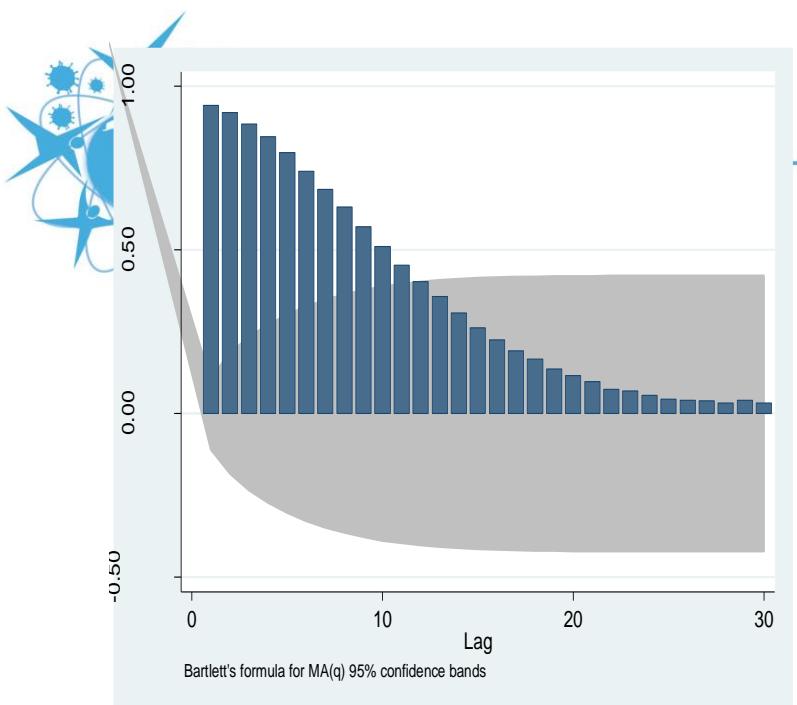
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Función de Autocorrelación Parcial



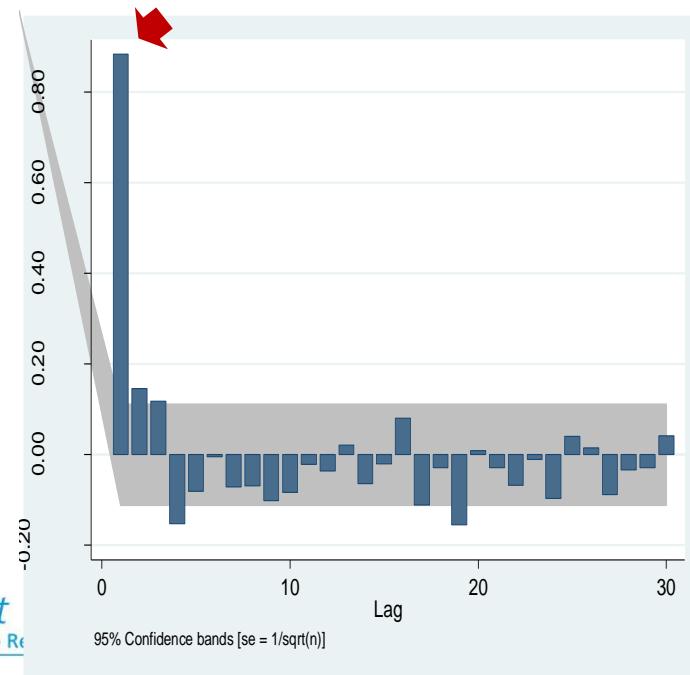
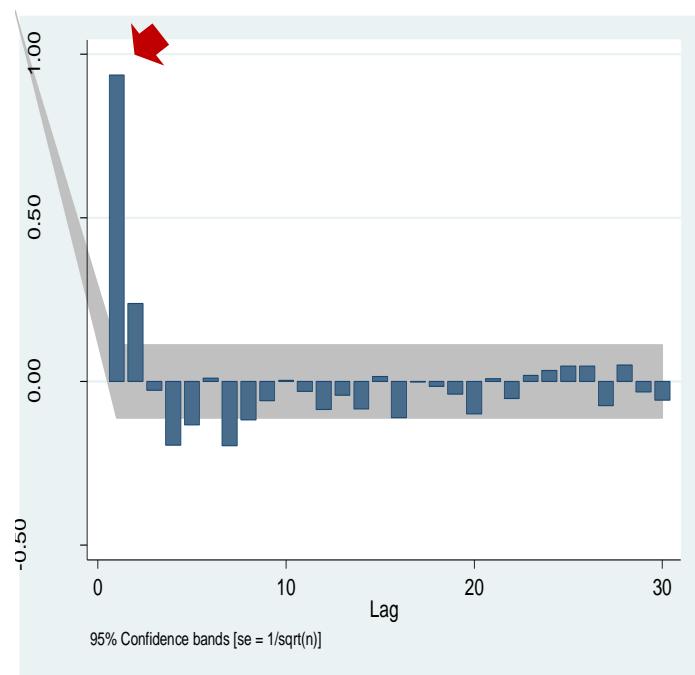
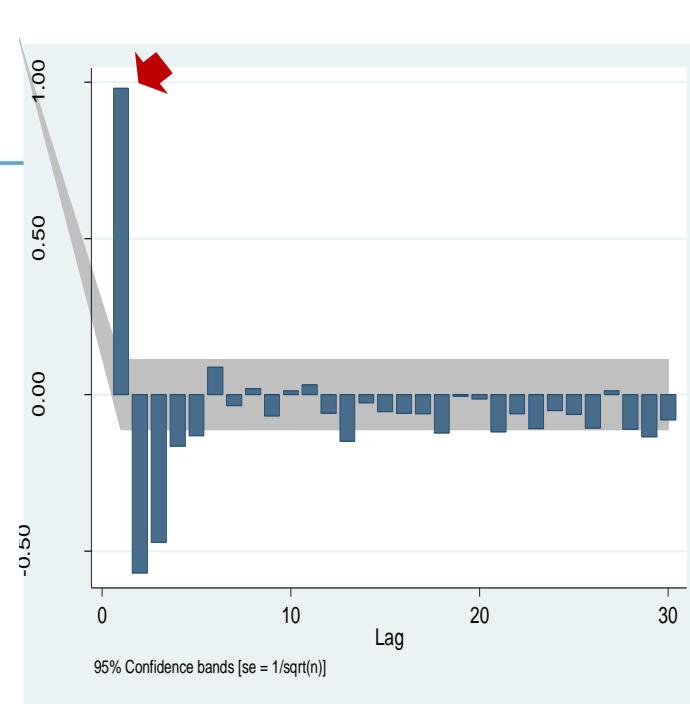
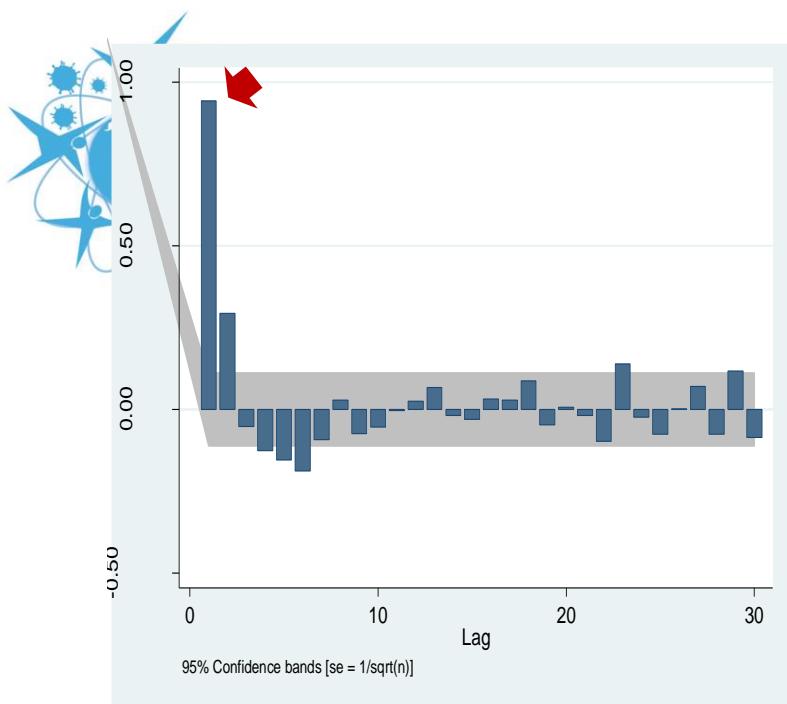
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Modelos ARIMA



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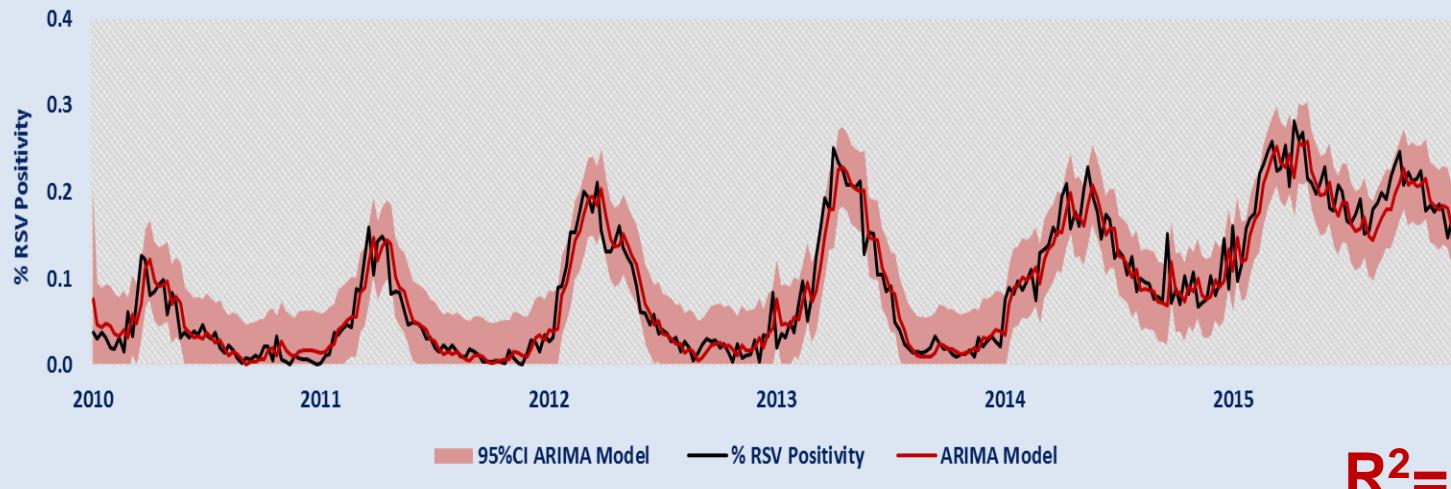
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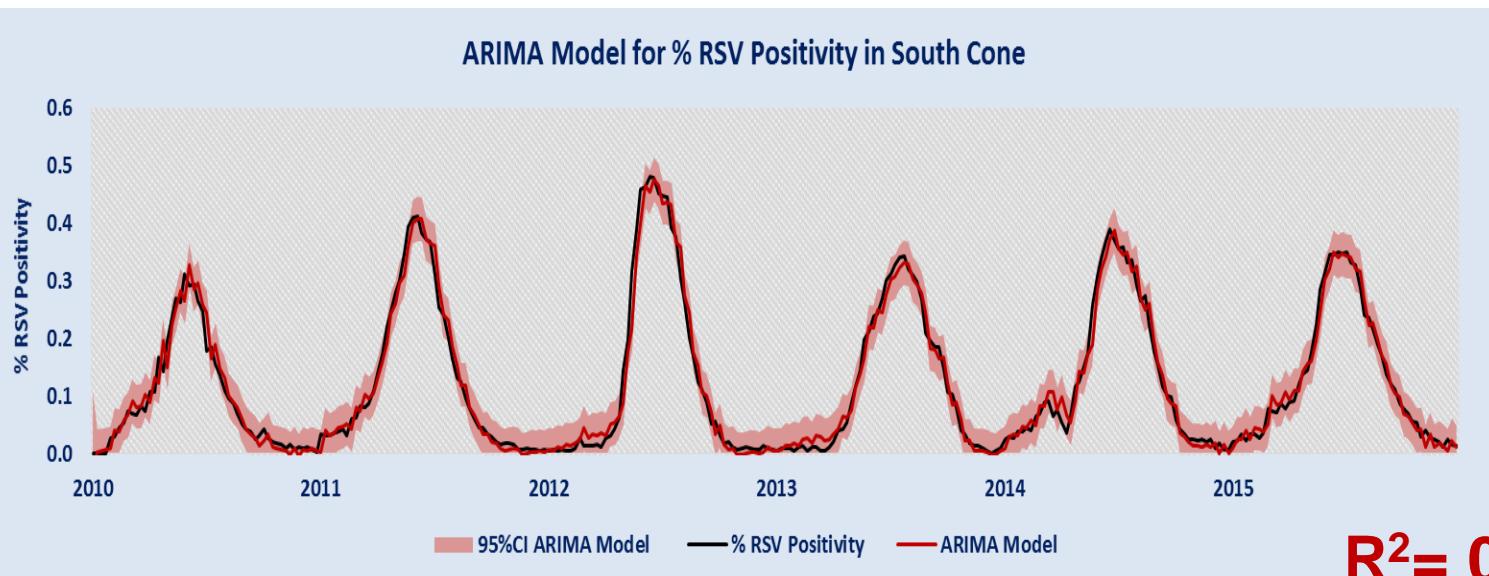
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ARIMA Model for % RSV Positivity in Andean



ARIMA Model for % RSV Positivity in South Cone



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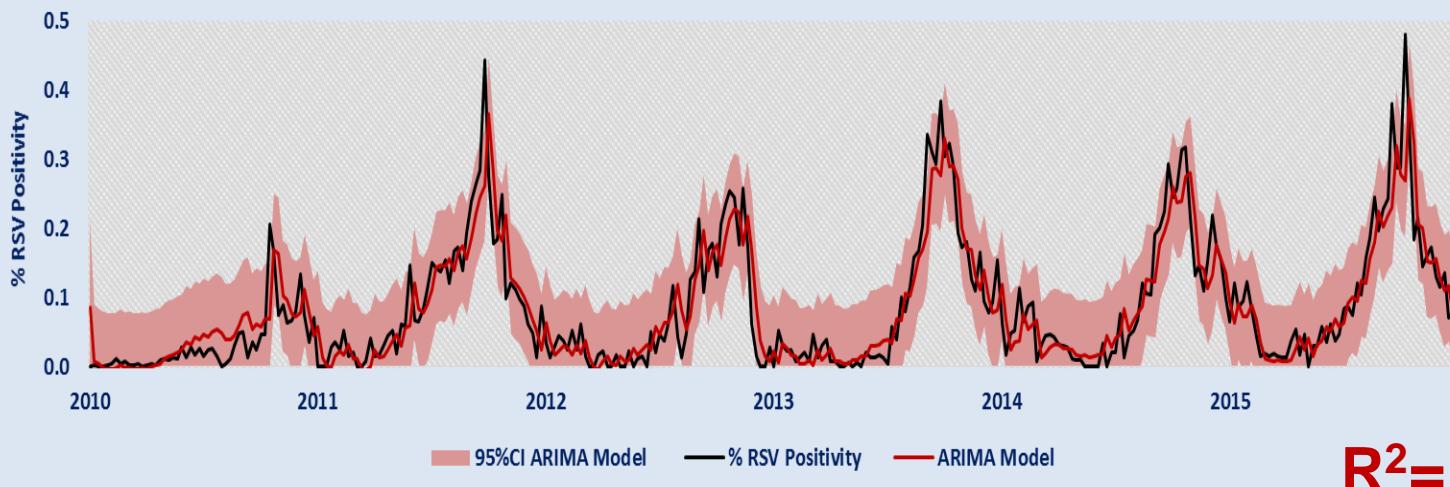
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ARIMA (1,0,1) Sine 360°

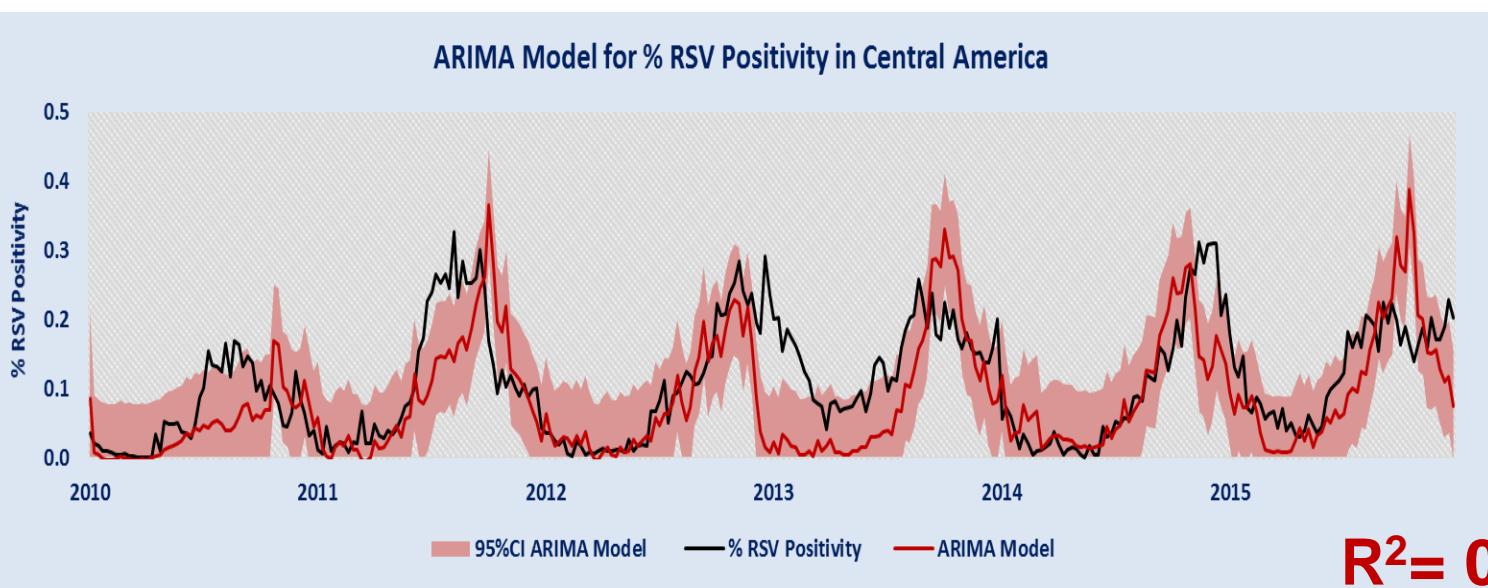
Cosine 360 °



ARIMA Model for % RSV Positivity in Caribbean



ARIMA Model for % RSV Positivity in Central America



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ARIMA (1,0,1) Sine 360° Cosine 360 °



Predicciones 2016



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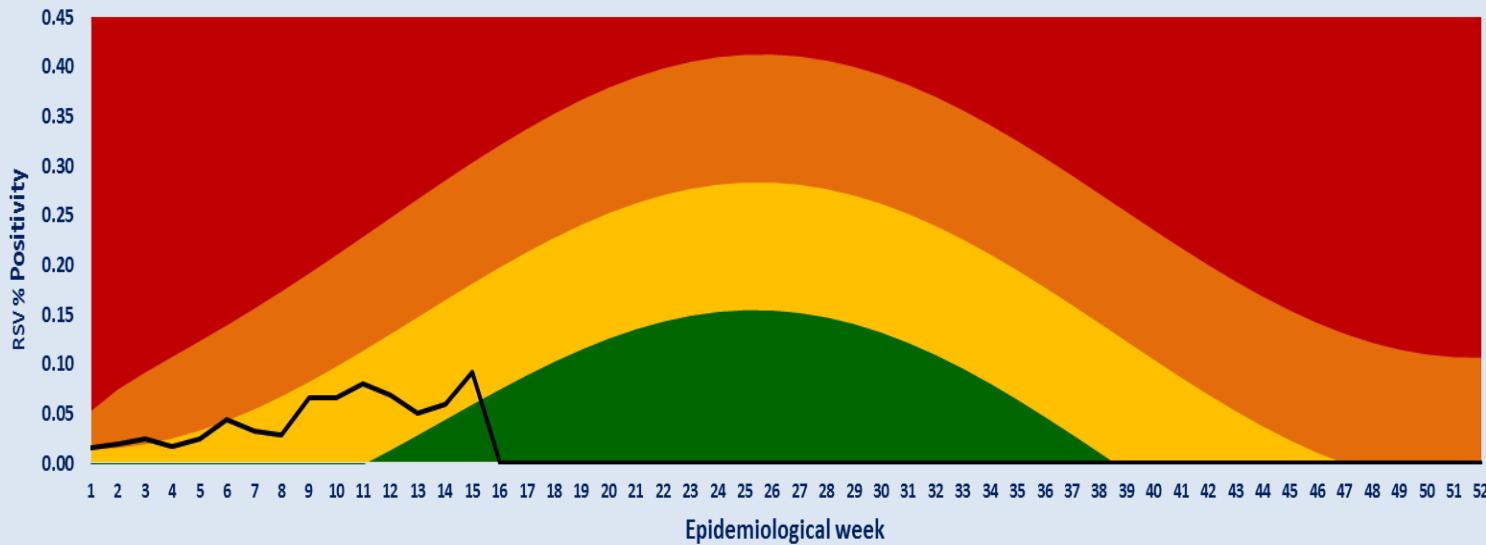


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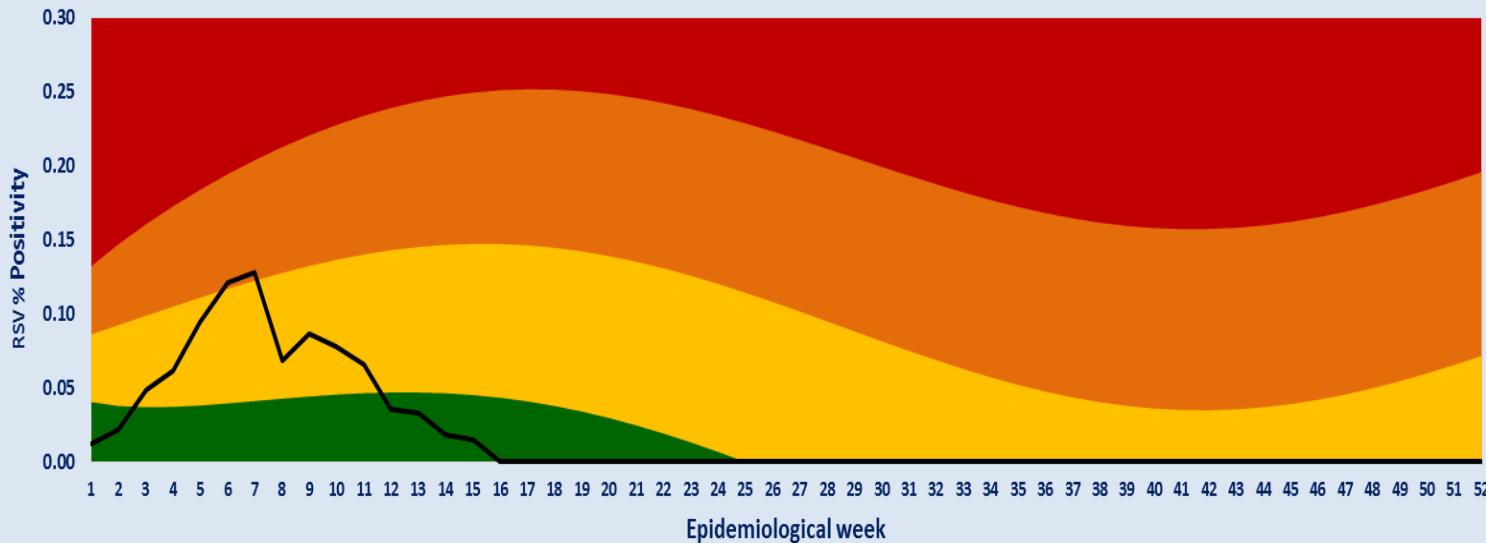
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Forecast for South Cone Region in 2016

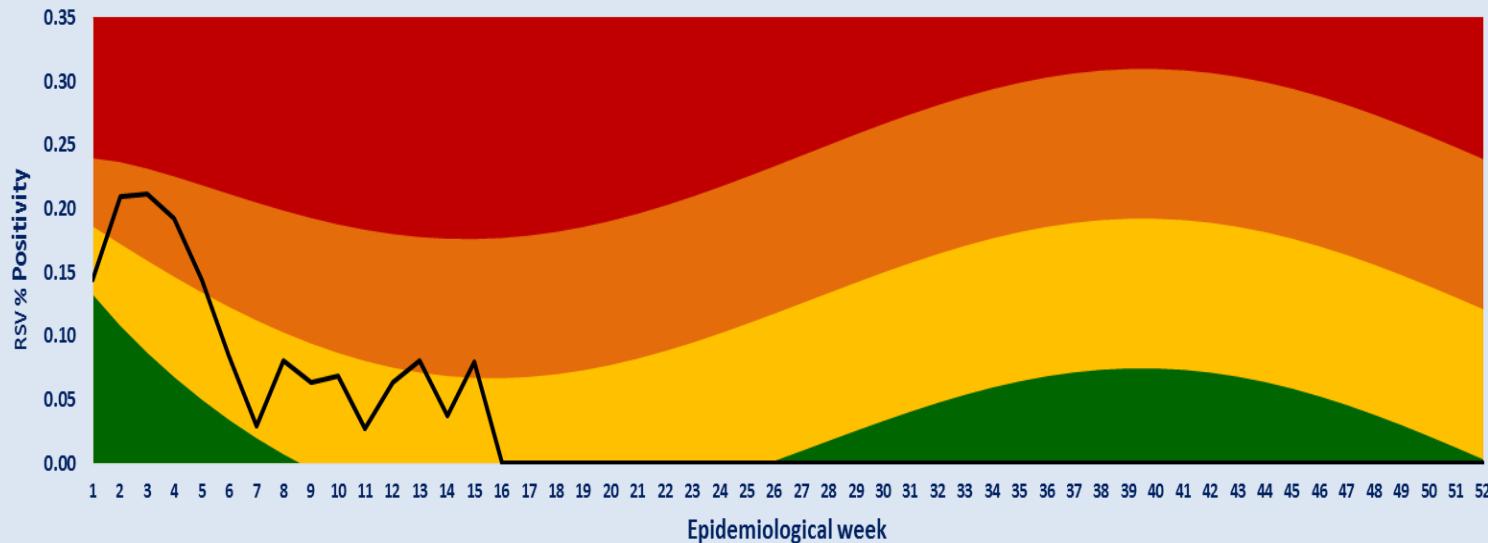


Forecast for Andean Region in 2016

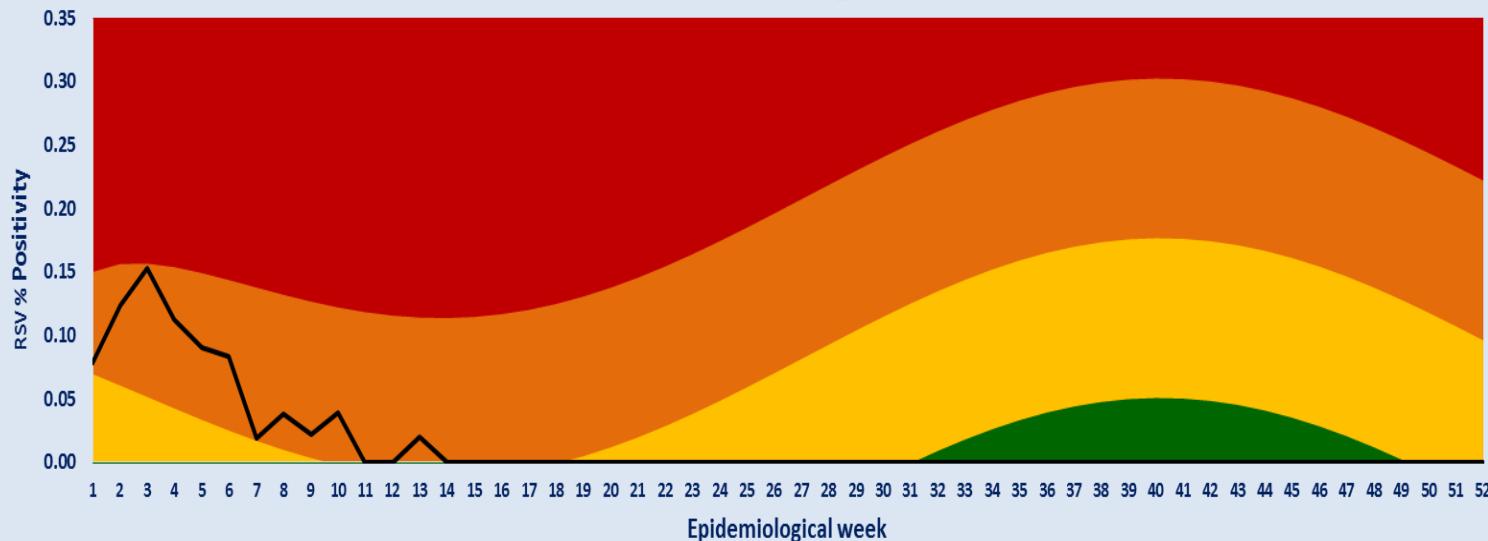




Forecast for Central America Region in 2016



Forecast for Caribbean Region in 2016





Conclusiones

- En las Américas, existe circulación de VSR todo el año
- Todas las sub-regiones LAC muestran una circulación estacional anual (Cono Sur: SE 16-36), (América Central y El Caribe: SE 28-51), (Región Andina: SE 6-26)
- Se observan diferencias en el % de positividad y amplitud de la curva, posiblemente asociado al tipo de vigilancia nacional y características geo-climáticas
- Region Andina.... Algo por investigar
- Se ha planteado unas predicciones para 2016, que se podrían ver afectados por Fenómeno del Niño?



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Agradecimientos

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- A Luis Bonilla
- Al Flu Team OPS, OMS

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