Proyecto de fin de Diplomado

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**Planteamiento del problema a resolver (4 puntos).** La inteligencia artificial (IA) cada vez esta abarcando más areas que ayudan al bienestar de las personas. En este contexto, las industrias acuícolas están comenzando a utilizar esta tecnología pero aún su uso es muy incipiente y no se sabe con certeza si la IA puede de manera efectiva mejorar los parámetros productivos de peces en cultivo y ser una tecnología viable en el futuro en un contexto de costos y beneficios. Debido a esta problemática se ha decidido realizar un experimento utilizando IA en el fotoperiodo de la especie Salmón del Atlantico *Salmo salar* mantenidos en agua dulce y agua de mar con el objetivo de evaluar si la IA mejora o modifica algunos parámetros productivos de la acuicultura de *Salmo salar* y si existen diferencias con respecto a su fisiología en comparación al sistema tradicionl de cultivo (luces sin inteligencia artificial).

**Descripción detallada de los datos originales (4 puntos).** Se tomaron datos productivos de peso, largo, factor de condición (K) y parámetros fisiológicos de actividad enzimática de ATPAsas branquial (NKA), niveles de glucosa, calcio, cloro, albúmina y cortisol en la especie *Salmo salar*. Todas las variables mencionadas corresponden a variables respuestas, mientras que las variables predictoras o factores fueron condición (con IA y sin IA) y el factor tiempo que tiene alrededor de 18 niveles (18 fechas de muestreo) para las variables respuesta peso, largo y factor de condición, mientras que las demás variables respuestas (NKA, glucosa, calcio, cloro, albúmina, cortisol) tienen 15 niveles (15 fechas de muestreo). Todas las variables respuestas son variables cuantitativas continuas. De la fecha inicial (05-10-2020) hasta la fecha 10-02-2021 los peces fueron mantenidos en agua dulce, mientras que desde las fechas 26-02-2021 hasta el 25-05-2021 los peces fueron mantenidos en agua de mar. Una flecha en las gráficas indica cuando los peces fueron trasladados al agua de mar.

**Análisis exploratorio de los datos**

Importación de datos productivos y ATPasa

a <- read\_excel("datos\_productivos\_luxmeter.xlsx")  
a$Fechas <- as.factor(a$Fechas)  
a$Condición <- as.factor(a$Condición)  
str(a)

## tibble [1,560 × 5] (S3: tbl\_df/tbl/data.frame)  
## $ Fechas : Factor w/ 17 levels "2020-10-05","2020-10-14",..: 1 1 1 1 1 1 1 1 1 1 ...  
## $ Condición: Factor w/ 2 levels "C","IA": 1 1 1 1 1 1 1 1 1 1 ...  
## $ Peso : num [1:1560] 38 38 36 46 40 52 50 36 58 40 ...  
## $ Largo : num [1:1560] 15.4 15 15.3 16.4 15.6 16.6 16.7 14.8 17.4 15.7 ...  
## $ K : num [1:1560] 1.04 1.13 1.01 1.04 1.05 ...

a2 <- read\_excel("nka\_luxmeter.xlsx")  
a2$Fechas <- as.factor(a2$Fechas)  
a2$Condición <- as.factor(a2$Condición)  
str(a2)

## tibble [600 × 3] (S3: tbl\_df/tbl/data.frame)  
## $ Fechas : Factor w/ 15 levels "2020-10-05","2020-10-14",..: 1 1 1 1 1 1 1 1 1 1 ...  
## $ Condición: Factor w/ 2 levels "C","IA": 1 1 1 1 1 1 1 1 1 1 ...  
## $ NKA : num [1:600] 13.5 13.6 13.4 13.8 13 ...

Importación de parámetros plasmáticos

b <- read\_excel("parametros\_plasmaticos\_luxmeter.xlsx")  
b$Fechas <- as.factor(b$Fechas)  
b$Condicion <- as.factor(b$Condicion)  
b$Cortisol <- as.numeric(b$Cortisol)

## Warning: NAs introduced by coercion

str(b)

## tibble [453 × 7] (S3: tbl\_df/tbl/data.frame)  
## $ Fechas : Factor w/ 15 levels "2020-10-05","2020-10-14",..: 1 1 1 1 1 1 1 1 1 1 ...  
## $ Condicion: Factor w/ 2 levels "C","IA": 1 1 1 1 1 1 2 2 2 2 ...  
## $ Glucosa : num [1:453] 13.49 8.28 9.58 8.84 8.17 ...  
## $ Calcio : num [1:453] 3.35 4.06 3.51 3.42 4 ...  
## $ Cloro : num [1:453] 241 252 237 231 231 ...  
## $ Albumina : num [1:453] 0.335 0.585 0.412 0.332 0.538 ...  
## $ Cortisol : num [1:453] 244 416 324 201 449 ...

Importación de datos para correlaciones

c <- read\_excel("Datos\_correlaciones\_luxmeter.xlsx")  
c$Fechas <- as.factor(c$Fechas)  
c$Condición <- as.factor(c$Condición)  
c$Glucosa <- as.numeric(c$Glucosa)

## Warning: NAs introduced by coercion

c$Calcio <- as.numeric(c$Calcio)

## Warning: NAs introduced by coercion

c$Cloro <- as.numeric(c$Cloro)

## Warning: NAs introduced by coercion

c$Albumina <- as.numeric(c$Albumina)

## Warning: NAs introduced by coercion

c$Cortisol <- as.numeric(c$Cortisol)

## Warning: NAs introduced by coercion

str(c)

## tibble [600 × 11] (S3: tbl\_df/tbl/data.frame)  
## $ Fechas : Factor w/ 15 levels "2020-10-05","2020-10-14",..: 1 1 1 1 1 1 1 1 1 1 ...  
## $ Condición: Factor w/ 2 levels "C","IA": 1 1 1 1 1 1 1 1 1 1 ...  
## $ Peso : num [1:600] 38 38 36 46 40 52 50 36 58 40 ...  
## $ Largo : num [1:600] 15.4 15 15.3 16.4 15.6 16.6 16.7 14.8 17.4 15.7 ...  
## $ K : num [1:600] 1.04 1.13 1.01 1.04 1.05 ...  
## $ NKA : num [1:600] 13.5 13.6 13.4 13.8 13 ...  
## $ Glucosa : num [1:600] 13.49 8.28 9.58 8.84 8.17 ...  
## $ Calcio : num [1:600] 3.35 4.06 3.51 3.42 4 ...  
## $ Cloro : num [1:600] 241 252 237 231 231 ...  
## $ Albumina : num [1:600] 0.335 0.585 0.412 0.332 0.538 ...  
## $ Cortisol : num [1:600] 244 416 324 201 449 ...

Resumen de los datos productivos

resumen\_datosa <- summary(a)  
pander::pander(resumen\_datosa, caption = "Resumen parámetros productivos")

Resumen parámetros productivos

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Fechas | Condición | Peso | Largo | K |
| 2021-05-25:800 | C :780 | Min. : 26.0 | Min. :13.60 | Min. :0.6588 |
| 2021-04-30:160 | IA:780 | 1st Qu.:130.0 | 1st Qu.:22.20 | 1st Qu.:1.1358 |
| 2020-10-05: 40 | NA | Median :279.6 | Median :28.30 | Median :1.2300 |
| 2020-10-14: 40 | NA | Mean :258.1 | Mean :26.39 | Mean :1.2307 |
| 2020-10-26: 40 | NA | 3rd Qu.:355.4 | 3rd Qu.:30.50 | 3rd Qu.:1.3335 |
| 2020-11-05: 40 | NA | Max. :680.0 | Max. :37.30 | Max. :1.6988 |
| (Other) :440 | NA | NA | NA | NA |

Resumen de la actividad enzimática NKA

resumen\_datosa2 <- summary(a2)  
pander::pander(resumen\_datosa2, caption = "Resumen actividad enzimática NKA branquial")

Resumen actividad enzimática NKA branquial

|  |  |  |
| --- | --- | --- |
| Fechas | Condición | NKA |
| 2020-10-05: 40 | C :300 | Min. :11.22 |
| 2020-10-14: 40 | IA:300 | 1st Qu.:12.99 |
| 2020-10-26: 40 | NA | Median :13.60 |
| 2020-11-05: 40 | NA | Mean :14.10 |
| 2020-11-14: 40 | NA | 3rd Qu.:14.81 |
| 2020-11-25: 40 | NA | Max. :19.85 |
| (Other) :360 | NA | NA |

Resumen de la actividad enzimática NKA

resumen\_datosb <- summary(b)  
pander::pander(resumen\_datosb, caption = "Resumen parámetros plasmáticos")

Resumen parámetros plasmáticos (continued below)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Fechas | Condicion | Glucosa | Calcio | Cloro |
| 2021-02-12: 40 | C :234 | Min. : 4.058 | Min. :2.869 | Min. :192.6 |
| 2021-03-15: 40 | IA:219 | 1st Qu.: 7.631 | 1st Qu.:4.458 | 1st Qu.:221.6 |
| 2021-03-30: 40 | NA | Median : 8.702 | Median :4.789 | Median :231.5 |
| 2021-04-15: 40 | NA | Mean : 8.702 | Mean :4.747 | Mean :233.7 |
| 2021-02-26: 39 | NA | 3rd Qu.: 9.668 | 3rd Qu.:5.096 | 3rd Qu.:242.8 |
| 2020-12-05: 38 | NA | Max. :20.259 | Max. :6.023 | Max. :334.0 |
| (Other) :216 | NA | NA | NA | NA |

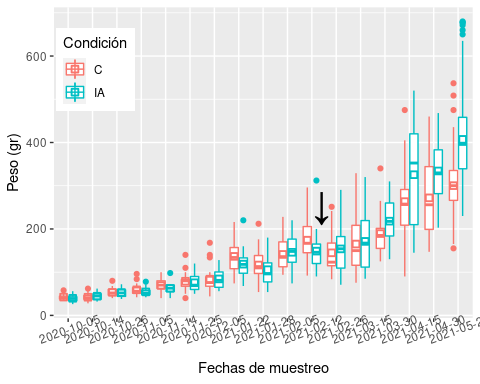
|  |  |
| --- | --- |
| Albumina | Cortisol |
| Min. :0.1684 | Min. : 0.0052 |
| 1st Qu.:0.7290 | 1st Qu.: 83.0548 |
| Median :0.8992 | Median :209.2448 |
| Mean :0.8585 | Mean :227.2589 |
| 3rd Qu.:1.0265 | 3rd Qu.:340.2016 |
| Max. :1.6572 | Max. :866.5350 |
| NA | NA’s :15 |

Análisis exploratorio de datos

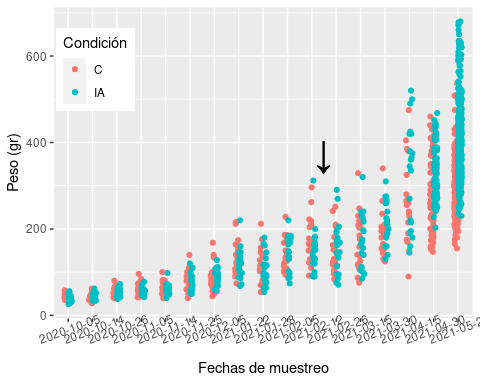
Peso

boxplot\_peso <- ggplot(a, aes(x = Fechas, y = Peso, color = Condición)) + geom\_boxplot() + labs( x = "Fechas de muestreo", y = "Peso (gr)") + theme(axis.text.x = element\_text(angle = 20), legend.position = c(0.1,0.8)) + stat\_summary(fun = mean, shape = 22, position = position\_dodge(width = 0.75)) + geom\_text(data = data.frame(x = c(11.421281756838, 11.421281756838), y = c(252.79800199825, 252.79800199825), label = c("", "↓")), mapping = aes(x = x, y = y, label = label), size = 10.58, inherit.aes = FALSE)  
boxplot\_peso

## Warning: Removed 34 rows containing missing values (geom\_segment).



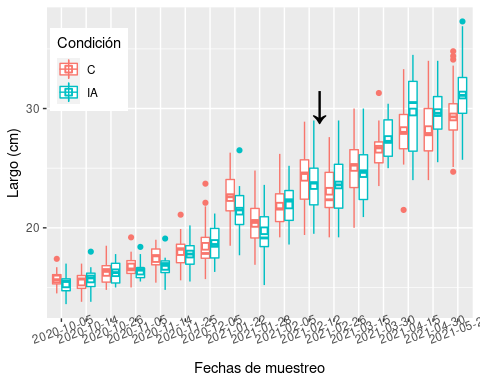
geompoint\_peso <- ggplot(a, aes(x = Fechas, y = Peso, color = Condición)) + geom\_point(position = position\_jitterdodge(jitter.width = 0.3, dodge.width = 0.3)) + labs( x = "Fechas de muestreo", y = "Peso (gr)") + theme(axis.text.x = element\_text(angle = 20), legend.position = c(0.1,0.8)) + geom\_text(data = data.frame(x = 11.4929019465336, y = 370.423497046294, label = "↓"), mapping = aes(x = x, y = y, label = label), size = 10.58, inherit.aes = FALSE)  
geompoint\_peso



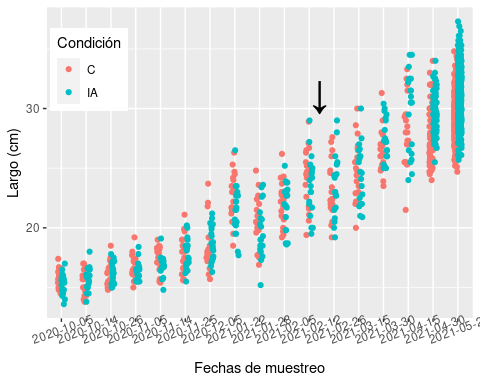
Largo

boxplot\_largo <- ggplot(a, aes(x = Fechas, y = Largo, color = Condición)) + geom\_boxplot() + labs( x = "Fechas de muestreo", y = "Largo (cm)") + theme(axis.text.x = element\_text(angle = 20), legend.position = c(0.1,0.8)) + stat\_summary(fun = mean, shape = 22, position = position\_dodge(width = 0.75)) + geom\_text(data = data.frame(x = 11.452862434858, y = 30.2220318334214, label = "↓"), mapping = aes(x = x, y = y, label = label), size = 10.58, inherit.aes = FALSE)  
boxplot\_largo

## Warning: Removed 34 rows containing missing values (geom\_segment).



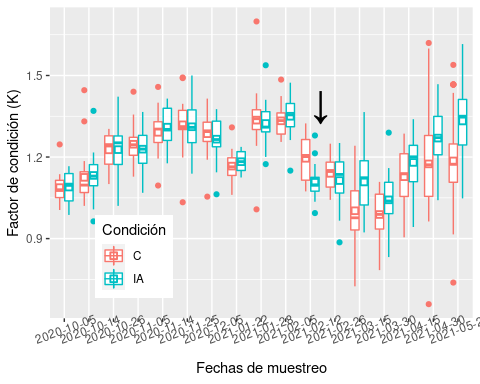
geompoint\_largo <- ggplot(a, aes(x = Fechas, y = Largo, color = Condición)) + geom\_point(position = position\_jitterdodge(jitter.width = 0.3, dodge.width = 0.3)) + labs( x = "Fechas de muestreo", y = "Largo (cm)") + theme(axis.text.x = element\_text(angle = 20), legend.position = c(0.1,0.8)) + geom\_text(data = data.frame(x = 11.4291694615725, y = 31.0850767676125, label = "↓"), mapping = aes(x = x, y = y, label = label), size = 10.58, inherit.aes = FALSE)  
geompoint\_largo



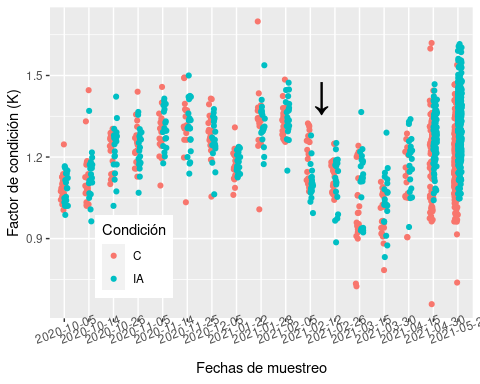
Factor de condición (K)

boxplot\_K <- ggplot(a, aes(x = Fechas, y = K, color = Condición)) + geom\_boxplot() + labs( x = "Fechas de muestreo", y = "Factor de condición (K)") + theme(axis.text.x = element\_text(angle = 20), legend.position = c(0.2,0.2)) + stat\_summary(fun = mean, shape = 22, position = position\_dodge(width = 0.75)) + geom\_text(data = data.frame(x = 11.4292750046114, y = 1.38809936254499, label = "↓"), mapping = aes(x = x, y = y, label = label), size = 10.58, inherit.aes = FALSE)  
boxplot\_K

## Warning: Removed 34 rows containing missing values (geom\_segment).



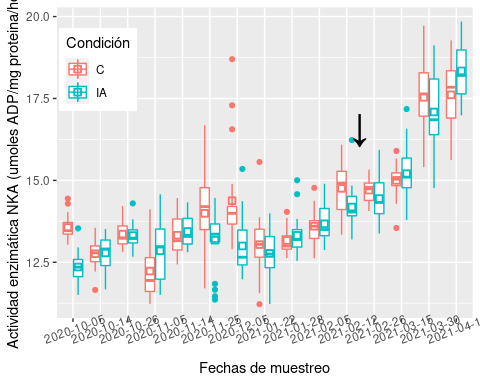
geompoint\_K <- ggplot(a, aes(x = Fechas, y = K, color = Condición)) + geom\_point(position = position\_jitterdodge(jitter.width = 0.3, dodge.width = 0.3)) + labs( x = "Fechas de muestreo", y = "Factor de condición (K)") + theme(axis.text.x = element\_text(angle = 20), legend.position = c(0.2,0.2)) + geom\_text(data = data.frame(x = 11.4772042897979, y = 1.42333122295923, label = "↓"), mapping = aes(x = x, y = y, label = label), size = 10.58, inherit.aes = FALSE)  
geompoint\_K



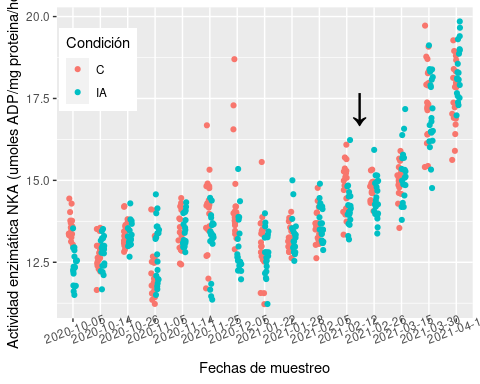
NKA

boxplot\_NKA <- ggplot(a2, aes(x = Fechas, y = NKA, color = Condición)) + geom\_boxplot() + labs( x = "Fechas de muestreo", y = "Actividad enzimática NKA (umoles ADP/mg proteina/hora)") + theme(axis.text.x = element\_text(angle = 20), legend.position = c(0.1,0.8)) + stat\_summary(fun = mean, shape = 22, position = position\_dodge(width = 0.75)) + geom\_text(data = data.frame(x = 11.4772042897979, y = 16.5883528852713, label = "↓"), mapping = aes(x = x, y = y, label = label), size = 10.58, inherit.aes = FALSE)  
boxplot\_NKA

## Warning: Removed 30 rows containing missing values (geom\_segment).



geompoint\_NKA <- ggplot(a2, aes(x = Fechas, y = NKA, color = Condición)) + geom\_point(position = position\_jitterdodge(jitter.width = 0.3, dodge.width = 0.3)) + labs( x = "Fechas de muestreo", y = "Actividad enzimática NKA (umoles ADP/mg proteina/hora)") + theme(axis.text.x = element\_text(angle = 20), legend.position = c(0.1,0.8)) + geom\_text(data = data.frame(x = 11.5011689323912, y = 17.2186957365544, label = "↓"), mapping = aes(x = x, y = y, label = label), size = 10.58, inherit.aes = FALSE)  
geompoint\_NKA



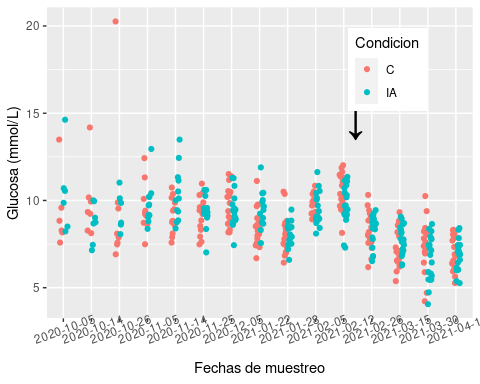
Glucosa

boxplot\_glucosa <- ggplot(b, aes(x = Fechas, y = Glucosa, color = Condicion)) + geom\_boxplot() + labs( x = "Fechas de muestreo", y = " Glucosa (mmol/L)") + theme(axis.text.x = element\_text(angle = 20), legend.position = c(0.8,0.8)) + stat\_summary(fun = mean, shape = 22, position = position\_dodge(width = 0.75)) + geom\_text(data = data.frame(x = 11.5002483814291, y = 12.9004219851579, label = "↓"), mapping = aes(x = x, y = y, label = label), size = 10.58, inherit.aes = FALSE)  
boxplot\_glucosa

## Warning: Removed 30 rows containing missing values (geom\_segment).



geompoint\_glucosa <- ggplot(b, aes(x = Fechas, y = Glucosa, color = Condicion)) + geom\_point(position = position\_jitterdodge(jitter.width = 0.3, dodge.width = 0.3)) + labs( x = "Fechas de muestreo", y = "Glucosa (mmol/L)") + theme(axis.text.x = element\_text(angle = 20), legend.position = c(0.8,0.8)) + geom\_text(data = data.frame(x = 11.452862434858, y = 14.5080165430836, label = "↓"), mapping = aes(x = x, y = y, label = label), size = 10.58, inherit.aes = FALSE)  
geompoint\_glucosa



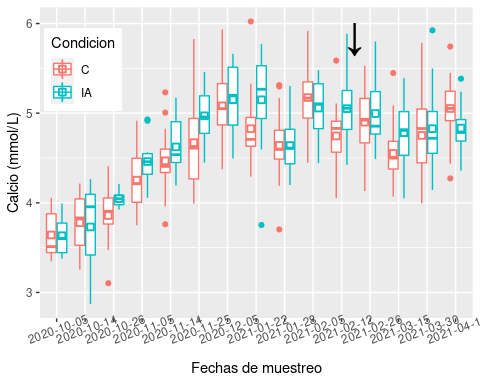
Calcio

boxplot\_calcio <- ggplot(b, aes(x = Fechas, y = Calcio, color = Condicion)) + geom\_boxplot() + labs( x = "Fechas de muestreo", y = "Calcio (mmol/L)") + theme(axis.text.x = element\_text(angle = 20), legend.position = c(0.1,0.8)) + stat\_summary(fun.y = mean, shape = 22, position = position\_dodge(width = 0.75)) + geom\_text(data = data.frame(x = 11.4839693511605, y = 5.84235851318247, label = "↓"), mapping = aes(x = x, y = y, label = label), size = 10.58, inherit.aes = FALSE)

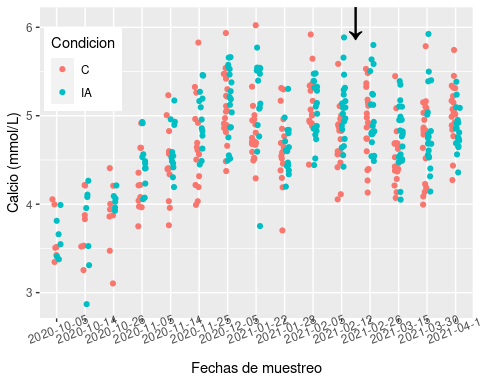
## Warning: `fun.y` is deprecated. Use `fun` instead.

boxplot\_calcio

## Warning: Removed 30 rows containing missing values (geom\_segment).



geompoint\_calcio <- ggplot(b, aes(x = Fechas, y = Calcio, color = Condicion)) + geom\_point(position = position\_jitterdodge(jitter.width = 0.3, dodge.width = 0.3)) + labs( x = "Fechas de muestreo", y = "Calcio (mmol/L)") + theme(axis.text.x = element\_text(angle = 20), legend.position = c(0.1,0.8)) + geom\_text(data = data.frame(x = 11.5074846078101, y = 6.06622963058537, label = "↓"), mapping = aes(x = x, y = y, label = label), size = 10.58, inherit.aes = FALSE)  
geompoint\_calcio



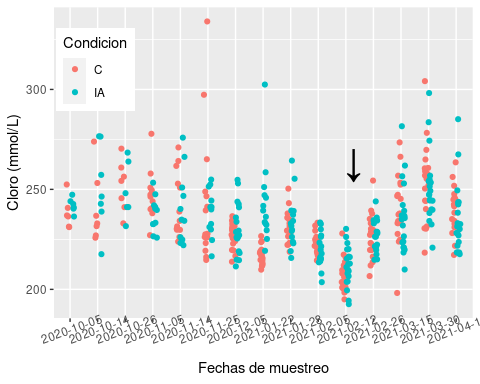
Cloro

boxplot\_cloro <- ggplot(b, aes(x = Fechas, y = Cloro, color = Condicion)) + geom\_boxplot() + labs( x = "Fechas de muestreo", y = "Cloro (mmol/L)") + theme(axis.text.x = element\_text(angle = 20), legend.position = c(0.1,0.8)) + stat\_summary(fun = mean, shape = 22, position = position\_dodge(width = 0.75)) + geom\_text(data = data.frame(x = 11.3257881705773, y = 258.718841483435, label = "↓"), mapping = aes(x = x, y = y, label = label), size = 10.58, inherit.aes = FALSE)  
boxplot\_cloro

## Warning: Removed 30 rows containing missing values (geom\_segment).



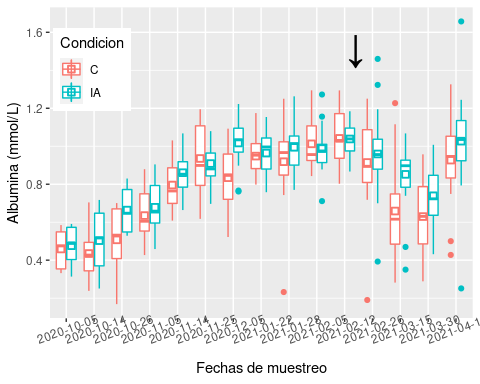
geompoint\_cloro <- ggplot(b, aes(x = Fechas, y = Cloro, color = Condicion)) + geom\_point(position = position\_jitterdodge(jitter.width = 0.3, dodge.width = 0.3)) + labs( x = "Fechas de muestreo", y = "Cloro (mmol/L)") + theme(axis.text.x = element\_text(angle = 20), legend.position = c(0.1,0.8)) + geom\_text(data = data.frame(x = 11.3019147740121, y = 263.0765260268,   
 label = "↓"), mapping = aes(x = x, y = y, label = label),   
 size = 10.58, inherit.aes = FALSE)  
geompoint\_cloro



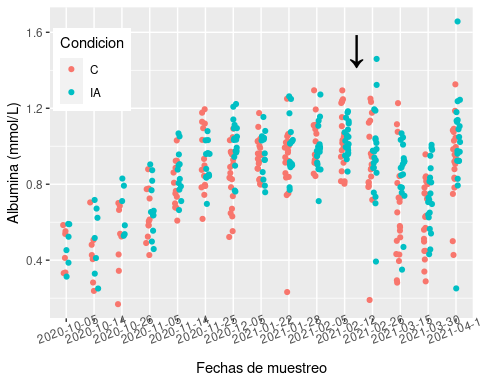
Albúmina

boxplot\_albumina <- ggplot(b, aes(x = Fechas, y = Albumina, color = Condicion)) + geom\_boxplot() + labs( x = "Fechas de muestreo", y = "Albumina (mmol/L)") + theme(axis.text.x = element\_text(angle = 20), legend.position = c(0.1,0.8)) + stat\_summary(fun = mean, shape = 22, position = position\_dodge(width = 0.75)) + geom\_text(data = data.frame(x = 11.4133491471997, y = 1.51119983533728, label = "↓"), mapping = aes(x = x, y = y, label = label), size = 10.58, inherit.aes = FALSE)  
boxplot\_albumina

## Warning: Removed 30 rows containing missing values (geom\_segment).



geompoint\_albumina <- ggplot(b, aes(x = Fechas, y = Albumina, color = Condicion)) + geom\_point(position = position\_jitterdodge(jitter.width = 0.3, dodge.width = 0.3)) + labs( x = "Fechas de muestreo", y = "Albumina (mmol/L)") + theme(axis.text.x = element\_text(angle = 20), legend.position = c(0.1,0.8)) + geom\_text(data = data.frame(x = 11.4371319899446, y = 1.50921177416825, label = "↓"), mapping = aes(x = x, y = y, label = label), size = 10.58, inherit.aes = FALSE)  
geompoint\_albumina



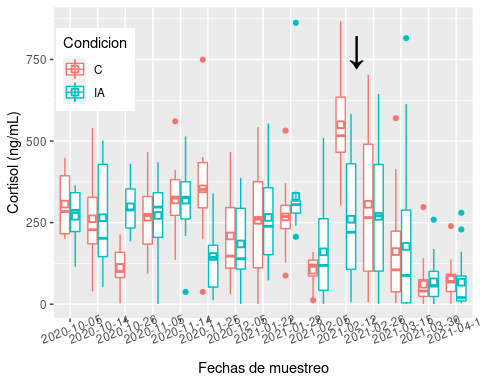
Cortisol

boxplot\_cortisol <- ggplot(b, aes(x = Fechas, y = Cortisol, color = Condicion)) + geom\_boxplot() + labs( x = "Fechas de muestreo", y = "Cortisol (ng/mL)") + theme(axis.text.x = element\_text(angle = 20), legend.position = c(0.1,0.8)) + stat\_summary(fun = mean, shape = 22, position = position\_dodge(width = 0.75)) + geom\_text(data = data.frame(x = 11.421281756838, y = 776.576160875106, label = "↓"), mapping = aes(x = x, y = y, label = label), size = 10.58, inherit.aes = FALSE)  
boxplot\_cortisol

## Warning: Removed 15 rows containing non-finite values (stat\_boxplot).

## Warning: Removed 15 rows containing non-finite values (stat\_summary).

## Warning: Removed 30 rows containing missing values (geom\_segment).



geompoint\_cortisol <- ggplot(b, aes(x = Fechas, y = Cortisol, color = Condicion)) + geom\_point(position = position\_jitterdodge(jitter.width = 0.3, dodge.width = 0.3)) + labs( x = "Fechas de muestreo", y = "Cortisol (ng/mL)") + theme(axis.text.x = element\_text(angle = 20), legend.position = c(0.1,0.8)) + geom\_text(data = data.frame(x = 11.3735349637076, y = 794.912470978678,   
 label = "↓"), mapping = aes(x = x, y = y, label = label),   
 size = 10.58, inherit.aes = FALSE)  
geompoint\_cortisol

## Warning: Removed 15 rows containing missing values (geom\_point).

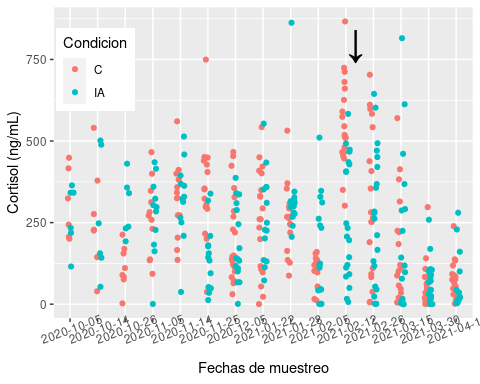
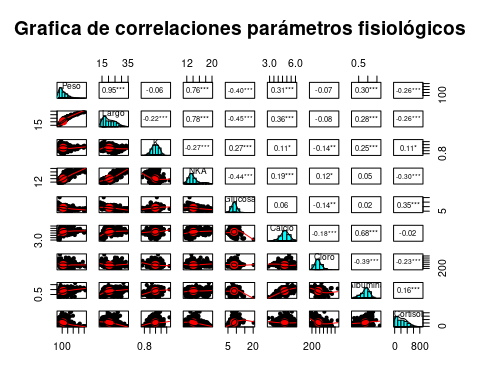


Grafico de correlaciones

pairs.panels(c[3:11], stars = TRUE, main = "Grafica de correlaciones parámetros fisiológicos")



**Análisis estadístico de los datos**

Efecto de la IA sobre el Peso

t2way(Peso ~ Condición + Fechas + Condición:Fechas, data = a,)

## Call:  
## t2way(formula = Peso ~ Condición + Fechas + Condición:Fechas,   
## data = a)  
##   
## value p.value  
## Condición 15.1590 0.001  
## Fechas 13759.4376 0.001  
## Condición:Fechas 359.9254 0.001

anovapeso <- aov(Peso ~ Condición + Fechas + Condición:Fechas, data = a)  
anova(anovapeso)

## Analysis of Variance Table  
##   
## Response: Peso  
## Df Sum Sq Mean Sq F value Pr(>F)   
## Condición 1 1514898 1514898 363.814 < 2.2e-16 \*\*\*  
## Fechas 16 22072961 1379560 331.312 < 2.2e-16 \*\*\*  
## Condición:Fechas 16 989713 61857 14.855 < 2.2e-16 \*\*\*  
## Residuals 1526 6354160 4164   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

TukeyHSD(anovapeso)

## Tukey multiple comparisons of means  
## 95% family-wise confidence level  
##   
## Fit: aov(formula = Peso ~ Condición + Fechas + Condición:Fechas, data = a)  
##   
## $Condición  
## diff lwr upr p adj  
## IA-C 62.32459 55.91527 68.73391 0  
##   
## $Fechas  
## diff lwr upr p adj  
## 2020-10-14-2020-10-05 2.20000 -47.7873079 52.18731 1.0000000  
## 2020-10-26-2020-10-05 12.20000 -37.7873079 62.18731 0.9999893  
## 2020-11-05-2020-10-05 15.82500 -34.1623079 65.81231 0.9996534  
## 2020-11-14-2020-10-05 24.90000 -25.0873079 74.88731 0.9520193  
## 2020-11-25-2020-10-05 36.30000 -13.6873079 86.28731 0.4899937  
## 2020-12-05-2020-10-05 43.15000 -6.8373079 93.13731 0.1899063  
## 2021-01-22-2020-10-05 86.60000 36.6126921 136.58731 0.0000003  
## 2021-01-28-2020-10-05 70.15000 20.1626921 120.13731 0.0001656  
## 2021-02-05-2020-10-05 102.60000 52.6126921 152.58731 0.0000000  
## 2021-02-12-2020-10-05 120.40000 70.4126921 170.38731 0.0000000  
## 2021-02-26-2020-10-05 108.38975 58.4024421 158.37706 0.0000000  
## 2021-03-15-2020-10-05 127.16250 77.1751921 177.14981 0.0000000  
## 2021-03-30-2020-10-05 162.67500 112.6876921 212.66231 0.0000000  
## 2021-04-15-2020-10-05 253.37500 203.3876921 303.36231 0.0000000  
## 2021-04-30-2020-10-05 262.08750 222.5690632 301.60594 0.0000000  
## 2021-05-25-2020-10-05 312.69291 276.4736669 348.91216 0.0000000  
## 2020-10-26-2020-10-14 10.00000 -39.9873079 59.98731 0.9999994  
## 2020-11-05-2020-10-14 13.62500 -36.3623079 63.61231 0.9999511  
## 2020-11-14-2020-10-14 22.70000 -27.2873079 72.68731 0.9795065  
## 2020-11-25-2020-10-14 34.10000 -15.8873079 84.08731 0.6069405  
## 2020-12-05-2020-10-14 40.95000 -9.0373079 90.93731 0.2693738  
## 2021-01-22-2020-10-14 84.40000 34.4126921 134.38731 0.0000008  
## 2021-01-28-2020-10-14 67.95000 17.9626921 117.93731 0.0003448  
## 2021-02-05-2020-10-14 100.40000 50.4126921 150.38731 0.0000000  
## 2021-02-12-2020-10-14 118.20000 68.2126921 168.18731 0.0000000  
## 2021-02-26-2020-10-14 106.18975 56.2024421 156.17706 0.0000000  
## 2021-03-15-2020-10-14 124.96250 74.9751921 174.94981 0.0000000  
## 2021-03-30-2020-10-14 160.47500 110.4876921 210.46231 0.0000000  
## 2021-04-15-2020-10-14 251.17500 201.1876921 301.16231 0.0000000  
## 2021-04-30-2020-10-14 259.88750 220.3690632 299.40594 0.0000000  
## 2021-05-25-2020-10-14 310.49291 274.2736669 346.71216 0.0000000  
## 2020-11-05-2020-10-26 3.62500 -46.3623079 53.61231 1.0000000  
## 2020-11-14-2020-10-26 12.70000 -37.2873079 62.68731 0.9999812  
## 2020-11-25-2020-10-26 24.10000 -25.8873079 74.08731 0.9640791  
## 2020-12-05-2020-10-26 30.95000 -19.0373079 80.93731 0.7637009  
## 2021-01-22-2020-10-26 74.40000 24.4126921 124.38731 0.0000375  
## 2021-01-28-2020-10-26 57.95000 7.9626921 107.93731 0.0069780  
## 2021-02-05-2020-10-26 90.40000 40.4126921 140.38731 0.0000001  
## 2021-02-12-2020-10-26 108.20000 58.2126921 158.18731 0.0000000  
## 2021-02-26-2020-10-26 96.18975 46.2024421 146.17706 0.0000000  
## 2021-03-15-2020-10-26 114.96250 64.9751921 164.94981 0.0000000  
## 2021-03-30-2020-10-26 150.47500 100.4876921 200.46231 0.0000000  
## 2021-04-15-2020-10-26 241.17500 191.1876921 291.16231 0.0000000  
## 2021-04-30-2020-10-26 249.88750 210.3690632 289.40594 0.0000000  
## 2021-05-25-2020-10-26 300.49291 264.2736669 336.71216 0.0000000  
## 2020-11-14-2020-11-05 9.07500 -40.9123079 59.06231 0.9999998  
## 2020-11-25-2020-11-05 20.47500 -29.5123079 70.46231 0.9928547  
## 2020-12-05-2020-11-05 27.32500 -22.6623079 77.31231 0.8979418  
## 2021-01-22-2020-11-05 70.77500 20.7876921 120.76231 0.0001339  
## 2021-01-28-2020-11-05 54.32500 4.3376921 104.31231 0.0179953  
## 2021-02-05-2020-11-05 86.77500 36.7876921 136.76231 0.0000003  
## 2021-02-12-2020-11-05 104.57500 54.5876921 154.56231 0.0000000  
## 2021-02-26-2020-11-05 92.56475 42.5774421 142.55206 0.0000000  
## 2021-03-15-2020-11-05 111.33750 61.3501921 161.32481 0.0000000  
## 2021-03-30-2020-11-05 146.85000 96.8626921 196.83731 0.0000000  
## 2021-04-15-2020-11-05 237.55000 187.5626921 287.53731 0.0000000  
## 2021-04-30-2020-11-05 246.26250 206.7440632 285.78094 0.0000000  
## 2021-05-25-2020-11-05 296.86791 260.6486669 333.08716 0.0000000  
## 2020-11-25-2020-11-14 11.40000 -38.5873079 61.38731 0.9999959  
## 2020-12-05-2020-11-14 18.25000 -31.7373079 68.23731 0.9980310  
## 2021-01-22-2020-11-14 61.70000 11.7126921 111.68731 0.0024109  
## 2021-01-28-2020-11-14 45.25000 -4.7373079 95.23731 0.1310088  
## 2021-02-05-2020-11-14 77.70000 27.7126921 127.68731 0.0000112  
## 2021-02-12-2020-11-14 95.50000 45.5126921 145.48731 0.0000000  
## 2021-02-26-2020-11-14 83.48975 33.5024421 133.47706 0.0000012  
## 2021-03-15-2020-11-14 102.26250 52.2751921 152.24981 0.0000000  
## 2021-03-30-2020-11-14 137.77500 87.7876921 187.76231 0.0000000  
## 2021-04-15-2020-11-14 228.47500 178.4876921 278.46231 0.0000000  
## 2021-04-30-2020-11-14 237.18750 197.6690632 276.70594 0.0000000  
## 2021-05-25-2020-11-14 287.79291 251.5736669 324.01216 0.0000000  
## 2020-12-05-2020-11-25 6.85000 -43.1373079 56.83731 1.0000000  
## 2021-01-22-2020-11-25 50.30000 0.3126921 100.28731 0.0466492  
## 2021-01-28-2020-11-25 33.85000 -16.1373079 83.83731 0.6201301  
## 2021-02-05-2020-11-25 66.30000 16.3126921 116.28731 0.0005879  
## 2021-02-12-2020-11-25 84.10000 34.1126921 134.08731 0.0000009  
## 2021-02-26-2020-11-25 72.08975 22.1024421 122.07706 0.0000850  
## 2021-03-15-2020-11-25 90.86250 40.8751921 140.84981 0.0000001  
## 2021-03-30-2020-11-25 126.37500 76.3876921 176.36231 0.0000000  
## 2021-04-15-2020-11-25 217.07500 167.0876921 267.06231 0.0000000  
## 2021-04-30-2020-11-25 225.78750 186.2690632 265.30594 0.0000000  
## 2021-05-25-2020-11-25 276.39291 240.1736669 312.61216 0.0000000  
## 2021-01-22-2020-12-05 43.45000 -6.5373079 93.43731 0.1804942  
## 2021-01-28-2020-12-05 27.00000 -22.9873079 76.98731 0.9068405  
## 2021-02-05-2020-12-05 59.45000 9.4626921 109.43731 0.0046064  
## 2021-02-12-2020-12-05 77.25000 27.2626921 127.23731 0.0000132  
## 2021-02-26-2020-12-05 65.23975 15.2524421 115.22706 0.0008222  
## 2021-03-15-2020-12-05 84.01250 34.0251921 133.99981 0.0000010  
## 2021-03-30-2020-12-05 119.52500 69.5376921 169.51231 0.0000000  
## 2021-04-15-2020-12-05 210.22500 160.2376921 260.21231 0.0000000  
## 2021-04-30-2020-12-05 218.93750 179.4190632 258.45594 0.0000000  
## 2021-05-25-2020-12-05 269.54291 233.3236669 305.76216 0.0000000  
## 2021-01-28-2021-01-22 -16.45000 -66.4373079 33.53731 0.9994368  
## 2021-02-05-2021-01-22 16.00000 -33.9873079 65.98731 0.9996018  
## 2021-02-12-2021-01-22 33.80000 -16.1873079 83.78731 0.6227594  
## 2021-02-26-2021-01-22 21.78975 -28.1975579 71.77706 0.9863379  
## 2021-03-15-2021-01-22 40.56250 -9.4248079 90.54981 0.2852472  
## 2021-03-30-2021-01-22 76.07500 26.0876921 126.06231 0.0000204  
## 2021-04-15-2021-01-22 166.77500 116.7876921 216.76231 0.0000000  
## 2021-04-30-2021-01-22 175.48750 135.9690632 215.00594 0.0000000  
## 2021-05-25-2021-01-22 226.09291 189.8736669 262.31216 0.0000000  
## 2021-02-05-2021-01-28 32.45000 -17.5373079 82.43731 0.6921537  
## 2021-02-12-2021-01-28 50.25000 0.2626921 100.23731 0.0471717  
## 2021-02-26-2021-01-28 38.23975 -11.7475579 88.22706 0.3909672  
## 2021-03-15-2021-01-28 57.01250 7.0251921 106.99981 0.0089848  
## 2021-03-30-2021-01-28 92.52500 42.5376921 142.51231 0.0000000  
## 2021-04-15-2021-01-28 183.22500 133.2376921 233.21231 0.0000000  
## 2021-04-30-2021-01-28 191.93750 152.4190632 231.45594 0.0000000  
## 2021-05-25-2021-01-28 242.54291 206.3236669 278.76216 0.0000000  
## 2021-02-12-2021-02-05 17.80000 -32.1873079 67.78731 0.9985323  
## 2021-02-26-2021-02-05 5.78975 -44.1975579 55.77706 1.0000000  
## 2021-03-15-2021-02-05 24.56250 -25.4248079 74.54981 0.9574233  
## 2021-03-30-2021-02-05 60.07500 10.0876921 110.06231 0.0038594  
## 2021-04-15-2021-02-05 150.77500 100.7876921 200.76231 0.0000000  
## 2021-04-30-2021-02-05 159.48750 119.9690632 199.00594 0.0000000  
## 2021-05-25-2021-02-05 210.09291 173.8736669 246.31216 0.0000000  
## 2021-02-26-2021-02-12 -12.01025 -61.9975579 37.97706 0.9999914  
## 2021-03-15-2021-02-12 6.76250 -43.2248079 56.74981 1.0000000  
## 2021-03-30-2021-02-12 42.27500 -7.7123079 92.26231 0.2193122  
## 2021-04-15-2021-02-12 132.97500 82.9876921 182.96231 0.0000000  
## 2021-04-30-2021-02-12 141.68750 102.1690632 181.20594 0.0000000  
## 2021-05-25-2021-02-12 192.29291 156.0736669 228.51216 0.0000000  
## 2021-03-15-2021-02-26 18.77275 -31.2145579 68.76006 0.9972705  
## 2021-03-30-2021-02-26 54.28525 4.2979421 104.27256 0.0181749  
## 2021-04-15-2021-02-26 144.98525 94.9979421 194.97256 0.0000000  
## 2021-04-30-2021-02-26 153.69775 114.1793132 193.21619 0.0000000  
## 2021-05-25-2021-02-26 204.30316 168.0839169 240.52241 0.0000000  
## 2021-03-30-2021-03-15 35.51250 -14.4748079 85.49981 0.5317375  
## 2021-04-15-2021-03-15 126.21250 76.2251921 176.19981 0.0000000  
## 2021-04-30-2021-03-15 134.92500 95.4065632 174.44344 0.0000000  
## 2021-05-25-2021-03-15 185.53041 149.3111669 221.74966 0.0000000  
## 2021-04-15-2021-03-30 90.70000 40.7126921 140.68731 0.0000001  
## 2021-04-30-2021-03-30 99.41250 59.8940632 138.93094 0.0000000  
## 2021-05-25-2021-03-30 150.01791 113.7986669 186.23716 0.0000000  
## 2021-04-30-2021-04-15 8.71250 -30.8059368 48.23094 0.9999974  
## 2021-05-25-2021-04-15 59.31791 23.0986669 95.53716 0.0000022  
## 2021-05-25-2021-04-30 50.60541 31.2454114 69.96541 0.0000000  
##   
## $`Condición:Fechas`  
## diff lwr upr p adj  
## IA:2020-10-05-C:2020-10-05 -2.90000 -80.7954823 74.995482 1.0000000  
## C:2020-10-14-C:2020-10-05 -0.40000 -78.2954823 77.495482 1.0000000  
## IA:2020-10-14-C:2020-10-05 1.90000 -75.9954823 79.795482 1.0000000  
## C:2020-10-26-C:2020-10-05 10.90000 -66.9954823 88.795482 1.0000000  
## IA:2020-10-26-C:2020-10-05 10.60000 -67.2954823 88.495482 1.0000000  
## C:2020-11-05-C:2020-10-05 16.80000 -61.0954823 94.695482 1.0000000  
## IA:2020-11-05-C:2020-10-05 11.95000 -65.9454823 89.845482 1.0000000  
## C:2020-11-14-C:2020-10-05 26.80000 -51.0954823 104.695482 0.9999972  
## IA:2020-11-14-C:2020-10-05 20.10000 -57.7954823 97.995482 1.0000000  
## C:2020-11-25-C:2020-10-05 36.60000 -41.2954823 114.495482 0.9980658  
## IA:2020-11-25-C:2020-10-05 33.10000 -44.7954823 110.995482 0.9997097  
## C:2020-12-05-C:2020-10-05 41.40000 -36.4954823 119.295482 0.9857513  
## IA:2020-12-05-C:2020-10-05 42.00000 -35.8954823 119.895482 0.9824583  
## C:2021-01-22-C:2020-10-05 94.10000 16.2045177 171.995482 0.0020957  
## IA:2021-01-22-C:2020-10-05 76.20000 -1.6954823 154.095482 0.0660303  
## C:2021-01-28-C:2020-10-05 74.10000 -3.7954823 151.995482 0.0916922  
## IA:2021-01-28-C:2020-10-05 63.30000 -14.5954823 141.195482 0.3624755  
## C:2021-02-05-C:2020-10-05 98.70000 20.8045177 176.595482 0.0007337  
## IA:2021-02-05-C:2020-10-05 103.60000 25.7045177 181.495482 0.0002249  
## C:2021-02-12-C:2020-10-05 131.60000 53.7045177 209.495482 0.0000001  
## IA:2021-02-12-C:2020-10-05 106.30000 28.4045177 184.195482 0.0001141  
## C:2021-02-26-C:2020-10-05 102.39450 24.4990177 180.289982 0.0003027  
## IA:2021-02-26-C:2020-10-05 111.48500 33.5895177 189.380482 0.0000294  
## C:2021-03-15-C:2020-10-05 122.63500 44.7395177 200.530482 0.0000013  
## IA:2021-03-15-C:2020-10-05 128.79000 50.8945177 206.685482 0.0000002  
## C:2021-03-30-C:2020-10-05 146.85000 68.9545177 224.745482 0.0000000  
## IA:2021-03-30-C:2020-10-05 175.60000 97.7045177 253.495482 0.0000000  
## C:2021-04-15-C:2020-10-05 220.75000 142.8545177 298.645482 0.0000000  
## IA:2021-04-15-C:2020-10-05 283.10000 205.2045177 360.995482 0.0000000  
## C:2021-04-30-C:2020-10-05 229.51375 167.9319641 291.095536 0.0000000  
## IA:2021-04-30-C:2020-10-05 291.76125 230.1794641 353.343036 0.0000000  
## C:2021-05-25-C:2020-10-05 257.74858 201.3079360 314.189214 0.0000000  
## IA:2021-05-25-C:2020-10-05 364.73725 308.2966110 421.177889 0.0000000  
## C:2020-10-14-IA:2020-10-05 2.50000 -75.3954823 80.395482 1.0000000  
## IA:2020-10-14-IA:2020-10-05 4.80000 -73.0954823 82.695482 1.0000000  
## C:2020-10-26-IA:2020-10-05 13.80000 -64.0954823 91.695482 1.0000000  
## IA:2020-10-26-IA:2020-10-05 13.50000 -64.3954823 91.395482 1.0000000  
## C:2020-11-05-IA:2020-10-05 19.70000 -58.1954823 97.595482 1.0000000  
## IA:2020-11-05-IA:2020-10-05 14.85000 -63.0454823 92.745482 1.0000000  
## C:2020-11-14-IA:2020-10-05 29.70000 -48.1954823 107.595482 0.9999705  
## IA:2020-11-14-IA:2020-10-05 23.00000 -54.8954823 100.895482 0.9999999  
## C:2020-11-25-IA:2020-10-05 39.50000 -38.3954823 117.395482 0.9930389  
## IA:2020-11-25-IA:2020-10-05 36.00000 -41.8954823 113.895482 0.9985615  
## C:2020-12-05-IA:2020-10-05 44.30000 -33.5954823 122.195482 0.9638736  
## IA:2020-12-05-IA:2020-10-05 44.90000 -32.9954823 122.795482 0.9571707  
## C:2021-01-22-IA:2020-10-05 97.00000 19.1045177 174.895482 0.0010889  
## IA:2021-01-22-IA:2020-10-05 79.10000 1.2045177 156.995482 0.0407579  
## C:2021-01-28-IA:2020-10-05 77.00000 -0.8954823 154.895482 0.0579927  
## IA:2021-01-28-IA:2020-10-05 66.20000 -11.6954823 144.095482 0.2648808  
## C:2021-02-05-IA:2020-10-05 101.60000 23.7045177 179.495482 0.0003673  
## IA:2021-02-05-IA:2020-10-05 106.50000 28.6045177 184.395482 0.0001085  
## C:2021-02-12-IA:2020-10-05 134.50000 56.6045177 212.395482 0.0000000  
## IA:2021-02-12-IA:2020-10-05 109.20000 31.3045177 187.095482 0.0000539  
## C:2021-02-26-IA:2020-10-05 105.29450 27.3990177 183.189982 0.0001473  
## IA:2021-02-26-IA:2020-10-05 114.38500 36.4895177 192.280482 0.0000134  
## C:2021-03-15-IA:2020-10-05 125.53500 47.6395177 203.430482 0.0000005  
## IA:2021-03-15-IA:2020-10-05 131.69000 53.7945177 209.585482 0.0000001  
## C:2021-03-30-IA:2020-10-05 149.75000 71.8545177 227.645482 0.0000000  
## IA:2021-03-30-IA:2020-10-05 178.50000 100.6045177 256.395482 0.0000000  
## C:2021-04-15-IA:2020-10-05 223.65000 145.7545177 301.545482 0.0000000  
## IA:2021-04-15-IA:2020-10-05 286.00000 208.1045177 363.895482 0.0000000  
## C:2021-04-30-IA:2020-10-05 232.41375 170.8319641 293.995536 0.0000000  
## IA:2021-04-30-IA:2020-10-05 294.66125 233.0794641 356.243036 0.0000000  
## C:2021-05-25-IA:2020-10-05 260.64857 204.2079360 317.089214 0.0000000  
## IA:2021-05-25-IA:2020-10-05 367.63725 311.1966110 424.077889 0.0000000  
## IA:2020-10-14-C:2020-10-14 2.30000 -75.5954823 80.195482 1.0000000  
## C:2020-10-26-C:2020-10-14 11.30000 -66.5954823 89.195482 1.0000000  
## IA:2020-10-26-C:2020-10-14 11.00000 -66.8954823 88.895482 1.0000000  
## C:2020-11-05-C:2020-10-14 17.20000 -60.6954823 95.095482 1.0000000  
## IA:2020-11-05-C:2020-10-14 12.35000 -65.5454823 90.245482 1.0000000  
## C:2020-11-14-C:2020-10-14 27.20000 -50.6954823 105.095482 0.9999961  
## IA:2020-11-14-C:2020-10-14 20.50000 -57.3954823 98.395482 1.0000000  
## C:2020-11-25-C:2020-10-14 37.00000 -40.8954823 114.895482 0.9976583  
## IA:2020-11-25-C:2020-10-14 33.50000 -44.3954823 111.395482 0.9996316  
## C:2020-12-05-C:2020-10-14 41.80000 -36.0954823 119.695482 0.9836175  
## IA:2020-12-05-C:2020-10-14 42.40000 -35.4954823 120.295482 0.9799432  
## C:2021-01-22-C:2020-10-14 94.50000 16.6045177 172.395482 0.0019175  
## IA:2021-01-22-C:2020-10-14 76.60000 -1.2954823 154.495482 0.0619009  
## C:2021-01-28-C:2020-10-14 74.50000 -3.3954823 152.395482 0.0862551  
## IA:2021-01-28-C:2020-10-14 63.70000 -14.1954823 141.595482 0.3480251  
## C:2021-02-05-C:2020-10-14 99.10000 21.2045177 176.995482 0.0006678  
## IA:2021-02-05-C:2020-10-14 104.00000 26.1045177 181.895482 0.0002037  
## C:2021-02-12-C:2020-10-14 132.00000 54.1045177 209.895482 0.0000001  
## IA:2021-02-12-C:2020-10-14 106.70000 28.8045177 184.595482 0.0001031  
## C:2021-02-26-C:2020-10-14 102.79450 24.8990177 180.689982 0.0002744  
## IA:2021-02-26-C:2020-10-14 111.88500 33.9895177 189.780482 0.0000265  
## C:2021-03-15-C:2020-10-14 123.03500 45.1395177 200.930482 0.0000011  
## IA:2021-03-15-C:2020-10-14 129.19000 51.2945177 207.085482 0.0000002  
## C:2021-03-30-C:2020-10-14 147.25000 69.3545177 225.145482 0.0000000  
## IA:2021-03-30-C:2020-10-14 176.00000 98.1045177 253.895482 0.0000000  
## C:2021-04-15-C:2020-10-14 221.15000 143.2545177 299.045482 0.0000000  
## IA:2021-04-15-C:2020-10-14 283.50000 205.6045177 361.395482 0.0000000  
## C:2021-04-30-C:2020-10-14 229.91375 168.3319641 291.495536 0.0000000  
## IA:2021-04-30-C:2020-10-14 292.16125 230.5794641 353.743036 0.0000000  
## C:2021-05-25-C:2020-10-14 258.14858 201.7079360 314.589214 0.0000000  
## IA:2021-05-25-C:2020-10-14 365.13725 308.6966110 421.577889 0.0000000  
## C:2020-10-26-IA:2020-10-14 9.00000 -68.8954823 86.895482 1.0000000  
## IA:2020-10-26-IA:2020-10-14 8.70000 -69.1954823 86.595482 1.0000000  
## C:2020-11-05-IA:2020-10-14 14.90000 -62.9954823 92.795482 1.0000000  
## IA:2020-11-05-IA:2020-10-14 10.05000 -67.8454823 87.945482 1.0000000  
## C:2020-11-14-IA:2020-10-14 24.90000 -52.9954823 102.795482 0.9999995  
## IA:2020-11-14-IA:2020-10-14 18.20000 -59.6954823 96.095482 1.0000000  
## C:2020-11-25-IA:2020-10-14 34.70000 -43.1954823 112.595482 0.9992724  
## IA:2020-11-25-IA:2020-10-14 31.20000 -46.6954823 109.095482 0.9999141  
## C:2020-12-05-IA:2020-10-14 39.50000 -38.3954823 117.395482 0.9930389  
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## IA:2021-01-22-IA:2020-10-14 74.30000 -3.5954823 152.195482 0.0889396  
## C:2021-01-28-IA:2020-10-14 72.20000 -5.6954823 150.095482 0.1214460  
## IA:2021-01-28-IA:2020-10-14 61.40000 -16.4954823 139.295482 0.4346876  
## C:2021-02-05-IA:2020-10-14 96.80000 18.9045177 174.695482 0.0011401  
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## C:2021-02-26-IA:2020-10-14 100.49450 22.5990177 178.389982 0.0004794  
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## C:2021-03-15-IA:2020-10-14 120.73500 42.8395177 198.630482 0.0000022  
## IA:2021-03-15-IA:2020-10-14 126.89000 48.9945177 204.785482 0.0000004  
## C:2021-03-30-IA:2020-10-14 144.95000 67.0545177 222.845482 0.0000000  
## IA:2021-03-30-IA:2020-10-14 173.70000 95.8045177 251.595482 0.0000000  
## C:2021-04-15-IA:2020-10-14 218.85000 140.9545177 296.745482 0.0000000  
## IA:2021-04-15-IA:2020-10-14 281.20000 203.3045177 359.095482 0.0000000  
## C:2021-04-30-IA:2020-10-14 227.61375 166.0319641 289.195536 0.0000000  
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## IA:2020-10-26-C:2020-10-26 -0.30000 -78.1954823 77.595482 1.0000000  
## C:2020-11-05-C:2020-10-26 5.90000 -71.9954823 83.795482 1.0000000  
## IA:2020-11-05-C:2020-10-26 1.05000 -76.8454823 78.945482 1.0000000  
## C:2020-11-14-C:2020-10-26 15.90000 -61.9954823 93.795482 1.0000000  
## IA:2020-11-14-C:2020-10-26 9.20000 -68.6954823 87.095482 1.0000000  
## C:2020-11-25-C:2020-10-26 25.70000 -52.1954823 103.595482 0.9999990  
## IA:2020-11-25-C:2020-10-26 22.20000 -55.6954823 100.095482 1.0000000  
## C:2020-12-05-C:2020-10-26 30.50000 -47.3954823 108.395482 0.9999471  
## IA:2020-12-05-C:2020-10-26 31.10000 -46.7954823 108.995482 0.9999197  
## C:2021-01-22-C:2020-10-26 83.20000 5.3045177 161.095482 0.0195229  
## IA:2021-01-22-C:2020-10-26 65.30000 -12.5954823 143.195482 0.2933119  
## C:2021-01-28-C:2020-10-26 63.20000 -14.6954823 141.095482 0.3661328  
## IA:2021-01-28-C:2020-10-26 52.40000 -25.4954823 130.295482 0.7881419  
## C:2021-02-05-C:2020-10-26 87.80000 9.9045177 165.695482 0.0079728  
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## C:2021-02-12-C:2020-10-26 120.70000 42.8045177 198.595482 0.0000023  
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## C:2021-02-26-C:2020-10-26 91.49450 13.5990177 169.389982 0.0036957  
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## C:2021-03-30-C:2020-10-26 135.95000 58.0545177 213.845482 0.0000000  
## IA:2021-03-30-C:2020-10-26 164.70000 86.8045177 242.595482 0.0000000  
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## IA:2021-04-15-C:2020-10-26 272.20000 194.3045177 350.095482 0.0000000  
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## C:2020-11-14-IA:2020-10-26 16.20000 -61.6954823 94.095482 1.0000000  
## IA:2020-11-14-IA:2020-10-26 9.50000 -68.3954823 87.395482 1.0000000  
## C:2020-11-25-IA:2020-10-26 26.00000 -51.8954823 103.895482 0.9999987  
## IA:2020-11-25-IA:2020-10-26 22.50000 -55.3954823 100.395482 1.0000000  
## C:2020-12-05-IA:2020-10-26 30.80000 -47.0954823 108.695482 0.9999347  
## IA:2020-12-05-IA:2020-10-26 31.40000 -46.4954823 109.295482 0.9999017  
## C:2021-01-22-IA:2020-10-26 83.50000 5.6045177 161.395482 0.0184556  
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## C:2021-01-28-IA:2020-10-26 63.50000 -14.3954823 141.395482 0.3552141  
## IA:2021-01-28-IA:2020-10-26 52.70000 -25.1954823 130.595482 0.7780393  
## C:2021-02-05-IA:2020-10-26 88.10000 10.2045177 165.995482 0.0075022  
## IA:2021-02-05-IA:2020-10-26 93.00000 15.1045177 170.895482 0.0026694  
## C:2021-02-12-IA:2020-10-26 121.00000 43.1045177 198.895482 0.0000021  
## IA:2021-02-12-IA:2020-10-26 95.70000 17.8045177 173.595482 0.0014647  
## C:2021-02-26-IA:2020-10-26 91.79450 13.8990177 169.689982 0.0034656  
## IA:2021-02-26-IA:2020-10-26 100.88500 22.9895177 178.780482 0.0004365  
## C:2021-03-15-IA:2020-10-26 112.03500 34.1395177 189.930482 0.0000254  
## IA:2021-03-15-IA:2020-10-26 118.19000 40.2945177 196.085482 0.0000046  
## C:2021-03-30-IA:2020-10-26 136.25000 58.3545177 214.145482 0.0000000  
## IA:2021-03-30-IA:2020-10-26 165.00000 87.1045177 242.895482 0.0000000  
## C:2021-04-15-IA:2020-10-26 210.15000 132.2545177 288.045482 0.0000000  
## IA:2021-04-15-IA:2020-10-26 272.50000 194.6045177 350.395482 0.0000000  
## C:2021-04-30-IA:2020-10-26 218.91375 157.3319641 280.495536 0.0000000  
## IA:2021-04-30-IA:2020-10-26 281.16125 219.5794641 342.743036 0.0000000  
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## IA:2020-11-05-C:2020-11-05 -4.85000 -82.7454823 73.045482 1.0000000  
## C:2020-11-14-C:2020-11-05 10.00000 -67.8954823 87.895482 1.0000000  
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## IA:2020-11-25-C:2020-11-05 16.30000 -61.5954823 94.195482 1.0000000  
## C:2020-12-05-C:2020-11-05 24.60000 -53.2954823 102.495482 0.9999997  
## IA:2020-12-05-C:2020-11-05 25.20000 -52.6954823 103.095482 0.9999994  
## C:2021-01-22-C:2020-11-05 77.30000 -0.5954823 155.195482 0.0552013  
## IA:2021-01-22-C:2020-11-05 59.40000 -18.4954823 137.295482 0.5153581  
## C:2021-01-28-C:2020-11-05 57.30000 -20.5954823 135.195482 0.6019041  
## IA:2021-01-28-C:2020-11-05 46.50000 -31.3954823 124.395482 0.9348269  
## C:2021-02-05-C:2020-11-05 81.90000 4.0045177 159.795482 0.0248176  
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## C:2021-04-15-C:2020-11-05 203.95000 126.0545177 281.845482 0.0000000  
## IA:2021-04-15-C:2020-11-05 266.30000 188.4045177 344.195482 0.0000000  
## C:2021-04-30-C:2020-11-05 212.71375 151.1319641 274.295536 0.0000000  
## IA:2021-04-30-C:2020-11-05 274.96125 213.3794641 336.543036 0.0000000  
## C:2021-05-25-C:2020-11-05 240.94858 184.5079360 297.389214 0.0000000  
## IA:2021-05-25-C:2020-11-05 347.93725 291.4966110 404.377889 0.0000000  
## C:2020-11-14-IA:2020-11-05 14.85000 -63.0454823 92.745482 1.0000000  
## IA:2020-11-14-IA:2020-11-05 8.15000 -69.7454823 86.045482 1.0000000  
## C:2020-11-25-IA:2020-11-05 24.65000 -53.2454823 102.545482 0.9999996  
## IA:2020-11-25-IA:2020-11-05 21.15000 -56.7454823 99.045482 1.0000000  
## C:2020-12-05-IA:2020-11-05 29.45000 -48.4454823 107.345482 0.9999755  
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## IA:2021-01-22-IA:2020-11-05 64.25000 -13.6454823 142.145482 0.3286431  
## C:2021-01-28-IA:2020-11-05 62.15000 -15.7454823 140.045482 0.4055380  
## IA:2021-01-28-IA:2020-11-05 51.35000 -26.5454823 129.245482 0.8216681  
## C:2021-02-05-IA:2020-11-05 86.75000 8.8545177 164.645482 0.0098419  
## IA:2021-02-05-IA:2020-11-05 91.65000 13.7545177 169.545482 0.0035747  
## C:2021-02-12-IA:2020-11-05 119.65000 41.7545177 197.545482 0.0000031  
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## C:2021-02-26-IA:2020-11-05 90.44450 12.5490177 168.339982 0.0046182  
## IA:2021-02-26-IA:2020-11-05 99.53500 21.6395177 177.430482 0.0006026  
## C:2021-03-15-IA:2020-11-05 110.68500 32.7895177 188.580482 0.0000365  
## IA:2021-03-15-IA:2020-11-05 116.84000 38.9445177 194.735482 0.0000068  
## C:2021-03-30-IA:2020-11-05 134.90000 57.0045177 212.795482 0.0000000  
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## C:2021-04-15-IA:2020-11-05 208.80000 130.9045177 286.695482 0.0000000  
## IA:2021-04-15-IA:2020-11-05 271.15000 193.2545177 349.045482 0.0000000  
## C:2021-04-30-IA:2020-11-05 217.56375 155.9819641 279.145536 0.0000000  
## IA:2021-04-30-IA:2020-11-05 279.81125 218.2294641 341.393036 0.0000000  
## C:2021-05-25-IA:2020-11-05 245.79858 189.3579360 302.239214 0.0000000  
## IA:2021-05-25-IA:2020-11-05 352.78725 296.3466110 409.227889 0.0000000  
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## C:2020-11-25-C:2020-11-14 9.80000 -68.0954823 87.695482 1.0000000  
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## C:2020-12-05-C:2020-11-14 14.60000 -63.2954823 92.495482 1.0000000  
## IA:2020-12-05-C:2020-11-14 15.20000 -62.6954823 93.095482 1.0000000  
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## IA:2020-11-25-IA:2020-11-14 13.00000 -64.8954823 90.895482 1.0000000  
## C:2020-12-05-IA:2020-11-14 21.30000 -56.5954823 99.195482 1.0000000  
## IA:2020-12-05-IA:2020-11-14 21.90000 -55.9954823 99.795482 1.0000000  
## C:2021-01-22-IA:2020-11-14 74.00000 -3.8954823 151.895482 0.0930945  
## IA:2021-01-22-IA:2020-11-14 56.10000 -21.7954823 133.995482 0.6506537  
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## C:2021-03-15-IA:2020-11-14 102.53500 24.6395177 180.430482 0.0002924  
## IA:2021-03-15-IA:2020-11-14 108.69000 30.7945177 186.585482 0.0000616  
## C:2021-03-30-IA:2020-11-14 126.75000 48.8545177 204.645482 0.0000004  
## IA:2021-03-30-IA:2020-11-14 155.50000 77.6045177 233.395482 0.0000000  
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## C:2021-04-30-IA:2020-11-14 209.41375 147.8319641 270.995536 0.0000000  
## IA:2021-04-30-IA:2020-11-14 271.66125 210.0794641 333.243036 0.0000000  
## C:2021-05-25-IA:2020-11-14 237.64857 181.2079360 294.089214 0.0000000  
## IA:2021-05-25-IA:2020-11-14 344.63725 288.1966110 401.077889 0.0000000  
## IA:2020-11-25-C:2020-11-25 -3.50000 -81.3954823 74.395482 1.0000000  
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## IA:2021-01-22-C:2020-11-25 39.60000 -38.2954823 117.495482 0.9927549  
## C:2021-01-28-C:2020-11-25 37.50000 -40.3954823 115.395482 0.9970462  
## IA:2021-01-28-C:2020-11-25 26.70000 -51.1954823 104.595482 0.9999975  
## C:2021-02-05-C:2020-11-25 62.10000 -15.7954823 139.995482 0.4074572  
## IA:2021-02-05-C:2020-11-25 67.00000 -10.8954823 144.895482 0.2411085  
## C:2021-02-12-C:2020-11-25 95.00000 17.1045177 172.895482 0.0017148  
## IA:2021-02-12-C:2020-11-25 69.70000 -8.1954823 147.595482 0.1715554  
## C:2021-02-26-C:2020-11-25 65.79450 -12.1009823 143.689982 0.2774728  
## IA:2021-02-26-C:2020-11-25 74.88500 -3.0104823 152.780482 0.0812752  
## C:2021-03-15-C:2020-11-25 86.03500 8.1395177 163.930482 0.0113362  
## IA:2021-03-15-C:2020-11-25 92.19000 14.2945177 170.085482 0.0031827  
## C:2021-03-30-C:2020-11-25 110.25000 32.3545177 188.145482 0.0000409  
## IA:2021-03-30-C:2020-11-25 139.00000 61.1045177 216.895482 0.0000000  
## C:2021-04-15-C:2020-11-25 184.15000 106.2545177 262.045482 0.0000000  
## IA:2021-04-15-C:2020-11-25 246.50000 168.6045177 324.395482 0.0000000  
## C:2021-04-30-C:2020-11-25 192.91375 131.3319641 254.495536 0.0000000  
## IA:2021-04-30-C:2020-11-25 255.16125 193.5794641 316.743036 0.0000000  
## C:2021-05-25-C:2020-11-25 221.14858 164.7079360 277.589214 0.0000000  
## IA:2021-05-25-C:2020-11-25 328.13725 271.6966110 384.577889 0.0000000  
## C:2020-12-05-IA:2020-11-25 8.30000 -69.5954823 86.195482 1.0000000  
## IA:2020-12-05-IA:2020-11-25 8.90000 -68.9954823 86.795482 1.0000000  
## C:2021-01-22-IA:2020-11-25 61.00000 -16.8954823 138.895482 0.4505237  
## IA:2021-01-22-IA:2020-11-25 43.10000 -34.7954823 120.995482 0.9748612  
## C:2021-01-28-IA:2020-11-25 41.00000 -36.8954823 118.895482 0.9876544  
## IA:2021-01-28-IA:2020-11-25 30.20000 -47.6954823 108.095482 0.9999574  
## C:2021-02-05-IA:2020-11-25 65.60000 -12.2954823 143.495482 0.2836399  
## IA:2021-02-05-IA:2020-11-25 70.50000 -7.3954823 148.395482 0.1540777  
## C:2021-02-12-IA:2020-11-25 98.50000 20.6045177 176.395482 0.0007689  
## IA:2021-02-12-IA:2020-11-25 73.20000 -4.6954823 151.095482 0.1049515  
## C:2021-02-26-IA:2020-11-25 69.29450 -8.6009823 147.189982 0.1809525  
## IA:2021-02-26-IA:2020-11-25 78.38500 0.4895177 156.280482 0.0460458  
## C:2021-03-15-IA:2020-11-25 89.53500 11.6395177 167.430482 0.0055861  
## IA:2021-03-15-IA:2020-11-25 95.69000 17.7945177 173.585482 0.0014680  
## C:2021-03-30-IA:2020-11-25 113.75000 35.8545177 191.645482 0.0000160  
## IA:2021-03-30-IA:2020-11-25 142.50000 64.6045177 220.395482 0.0000000  
## C:2021-04-15-IA:2020-11-25 187.65000 109.7545177 265.545482 0.0000000  
## IA:2021-04-15-IA:2020-11-25 250.00000 172.1045177 327.895482 0.0000000  
## C:2021-04-30-IA:2020-11-25 196.41375 134.8319641 257.995536 0.0000000  
## IA:2021-04-30-IA:2020-11-25 258.66125 197.0794641 320.243036 0.0000000  
## C:2021-05-25-IA:2020-11-25 224.64858 168.2079360 281.089214 0.0000000  
## IA:2021-05-25-IA:2020-11-25 331.63725 275.1966110 388.077889 0.0000000  
## IA:2020-12-05-C:2020-12-05 0.60000 -77.2954823 78.495482 1.0000000  
## C:2021-01-22-C:2020-12-05 52.70000 -25.1954823 130.595482 0.7780393  
## IA:2021-01-22-C:2020-12-05 34.80000 -43.0954823 112.695482 0.9992317  
## C:2021-01-28-C:2020-12-05 32.70000 -45.1954823 110.595482 0.9997727  
## IA:2021-01-28-C:2020-12-05 21.90000 -55.9954823 99.795482 1.0000000  
## C:2021-02-05-C:2020-12-05 57.30000 -20.5954823 135.195482 0.6019041  
## IA:2021-02-05-C:2020-12-05 62.20000 -15.6954823 140.095482 0.4036225  
## C:2021-02-12-C:2020-12-05 90.20000 12.3045177 168.095482 0.0048618  
## IA:2021-02-12-C:2020-12-05 64.90000 -12.9954823 142.795482 0.3065042  
## C:2021-02-26-C:2020-12-05 60.99450 -16.9009823 138.889982 0.4507427  
## IA:2021-02-26-C:2020-12-05 70.08500 -7.8104823 147.980482 0.1629698  
## C:2021-03-15-C:2020-12-05 81.23500 3.3395177 159.130482 0.0279936  
## IA:2021-03-15-C:2020-12-05 87.39000 9.4945177 165.285482 0.0086598  
## C:2021-03-30-C:2020-12-05 105.45000 27.5545177 183.345482 0.0001416  
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## C:2021-04-15-C:2020-12-05 179.35000 101.4545177 257.245482 0.0000000  
## IA:2021-04-15-C:2020-12-05 241.70000 163.8045177 319.595482 0.0000000  
## C:2021-04-30-C:2020-12-05 188.11375 126.5319641 249.695536 0.0000000  
## IA:2021-04-30-C:2020-12-05 250.36125 188.7794641 311.943036 0.0000000  
## C:2021-05-25-C:2020-12-05 216.34858 159.9079360 272.789214 0.0000000  
## IA:2021-05-25-C:2020-12-05 323.33725 266.8966110 379.777889 0.0000000  
## C:2021-01-22-IA:2020-12-05 52.10000 -25.7954823 129.995482 0.7980180  
## IA:2021-01-22-IA:2020-12-05 34.20000 -43.6954823 112.095482 0.9994486  
## C:2021-01-28-IA:2020-12-05 32.10000 -45.7954823 109.995482 0.9998443  
## IA:2021-01-28-IA:2020-12-05 21.30000 -56.5954823 99.195482 1.0000000  
## C:2021-02-05-IA:2020-12-05 56.70000 -21.1954823 134.595482 0.6264183  
## IA:2021-02-05-IA:2020-12-05 61.60000 -16.2954823 139.495482 0.4268415  
## C:2021-02-12-IA:2020-12-05 89.60000 11.7045177 167.495482 0.0055111  
## IA:2021-02-12-IA:2020-12-05 64.30000 -13.5954823 142.195482 0.3269100  
## C:2021-02-26-IA:2020-12-05 60.39450 -17.5009823 138.289982 0.4748172  
## IA:2021-02-26-IA:2020-12-05 69.48500 -8.4104823 147.380482 0.1764923  
## C:2021-03-15-IA:2020-12-05 80.63500 2.7395177 158.530482 0.0311637  
## IA:2021-03-15-IA:2020-12-05 86.79000 8.8945177 164.685482 0.0097639  
## C:2021-03-30-IA:2020-12-05 104.85000 26.9545177 182.745482 0.0001647  
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## C:2021-04-15-IA:2020-12-05 178.75000 100.8545177 256.645482 0.0000000  
## IA:2021-04-15-IA:2020-12-05 241.10000 163.2045177 318.995482 0.0000000  
## C:2021-04-30-IA:2020-12-05 187.51375 125.9319641 249.095536 0.0000000  
## IA:2021-04-30-IA:2020-12-05 249.76125 188.1794641 311.343036 0.0000000  
## C:2021-05-25-IA:2020-12-05 215.74858 159.3079360 272.189214 0.0000000  
## IA:2021-05-25-IA:2020-12-05 322.73725 266.2966110 379.177889 0.0000000  
## IA:2021-01-22-C:2021-01-22 -17.90000 -95.7954823 59.995482 1.0000000  
## C:2021-01-28-C:2021-01-22 -20.00000 -97.8954823 57.895482 1.0000000  
## IA:2021-01-28-C:2021-01-22 -30.80000 -108.6954823 47.095482 0.9999347  
## C:2021-02-05-C:2021-01-22 4.60000 -73.2954823 82.495482 1.0000000  
## IA:2021-02-05-C:2021-01-22 9.50000 -68.3954823 87.395482 1.0000000  
## C:2021-02-12-C:2021-01-22 37.50000 -40.3954823 115.395482 0.9970462  
## IA:2021-02-12-C:2021-01-22 12.20000 -65.6954823 90.095482 1.0000000  
## C:2021-02-26-C:2021-01-22 8.29450 -69.6009823 86.189982 1.0000000  
## IA:2021-02-26-C:2021-01-22 17.38500 -60.5104823 95.280482 1.0000000  
## C:2021-03-15-C:2021-01-22 28.53500 -49.3604823 106.430482 0.9999880  
## IA:2021-03-15-C:2021-01-22 34.69000 -43.2054823 112.585482 0.9992763  
## C:2021-03-30-C:2021-01-22 52.75000 -25.1454823 130.645482 0.7763340  
## IA:2021-03-30-C:2021-01-22 81.50000 3.6045177 159.395482 0.0266871  
## C:2021-04-15-C:2021-01-22 126.65000 48.7545177 204.545482 0.0000004  
## IA:2021-04-15-C:2021-01-22 189.00000 111.1045177 266.895482 0.0000000  
## C:2021-04-30-C:2021-01-22 135.41375 73.8319641 196.995536 0.0000000  
## IA:2021-04-30-C:2021-01-22 197.66125 136.0794641 259.243036 0.0000000  
## C:2021-05-25-C:2021-01-22 163.64858 107.2079360 220.089214 0.0000000  
## IA:2021-05-25-C:2021-01-22 270.63725 214.1966110 327.077889 0.0000000  
## C:2021-01-28-IA:2021-01-22 -2.10000 -79.9954823 75.795482 1.0000000  
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## C:2021-02-05-IA:2021-01-22 22.50000 -55.3954823 100.395482 1.0000000  
## IA:2021-02-05-IA:2021-01-22 27.40000 -50.4954823 105.295482 0.9999953  
## C:2021-02-12-IA:2021-01-22 55.40000 -22.4954823 133.295482 0.6784421  
## IA:2021-02-12-IA:2021-01-22 30.10000 -47.7954823 107.995482 0.9999603  
## C:2021-02-26-IA:2021-01-22 26.19450 -51.7009823 104.089982 0.9999984  
## IA:2021-02-26-IA:2021-01-22 35.28500 -42.6104823 113.180482 0.9990043  
## C:2021-03-15-IA:2021-01-22 46.43500 -31.4604823 124.330482 0.9358696  
## IA:2021-03-15-IA:2021-01-22 52.59000 -25.3054823 130.485482 0.7817694  
## C:2021-03-30-IA:2021-01-22 70.65000 -7.2454823 148.545482 0.1509551  
## IA:2021-03-30-IA:2021-01-22 99.40000 21.5045177 177.295482 0.0006221  
## C:2021-04-15-IA:2021-01-22 144.55000 66.6545177 222.445482 0.0000000  
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## C:2021-04-30-IA:2021-01-22 153.31375 91.7319641 214.895536 0.0000000  
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## C:2021-02-05-C:2021-01-28 24.60000 -53.2954823 102.495482 0.9999997  
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## C:2021-02-12-C:2021-01-28 57.50000 -20.3954823 135.395482 0.5936882  
## IA:2021-02-12-C:2021-01-28 32.20000 -45.6954823 110.095482 0.9998340  
## C:2021-02-26-C:2021-01-28 28.29450 -49.6009823 106.189982 0.9999901  
## IA:2021-02-26-C:2021-01-28 37.38500 -40.5104823 115.280482 0.9971979  
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## C:2021-03-30-C:2021-01-28 72.75000 -5.1454823 150.645482 0.1121373  
## IA:2021-03-30-C:2021-01-28 101.50000 23.6045177 179.395482 0.0003763  
## C:2021-04-15-C:2021-01-28 146.65000 68.7545177 224.545482 0.0000000  
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## C:2021-04-30-C:2021-01-28 155.41375 93.8319641 216.995536 0.0000000  
## IA:2021-04-30-C:2021-01-28 217.66125 156.0794641 279.243036 0.0000000  
## C:2021-05-25-C:2021-01-28 183.64857 127.2079360 240.089214 0.0000000  
## IA:2021-05-25-C:2021-01-28 290.63725 234.1966110 347.077889 0.0000000  
## C:2021-02-05-IA:2021-01-28 35.40000 -42.4954823 113.295482 0.9989424  
## IA:2021-02-05-IA:2021-01-28 40.30000 -37.5954823 118.195482 0.9904837  
## C:2021-02-12-IA:2021-01-28 68.30000 -9.5954823 146.195482 0.2055607  
## IA:2021-02-12-IA:2021-01-28 43.00000 -34.8954823 120.895482 0.9756433  
## C:2021-02-26-IA:2021-01-28 39.09450 -38.8009823 116.989982 0.9940971  
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## C:2021-03-15-IA:2021-01-28 59.33500 -18.5604823 137.230482 0.5180279  
## IA:2021-03-15-IA:2021-01-28 65.49000 -12.4054823 143.385482 0.2871639  
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## C:2021-04-15-IA:2021-01-28 157.45000 79.5545177 235.345482 0.0000000  
## IA:2021-04-15-IA:2021-01-28 219.80000 141.9045177 297.695482 0.0000000  
## C:2021-04-30-IA:2021-01-28 166.21375 104.6319641 227.795536 0.0000000  
## IA:2021-04-30-IA:2021-01-28 228.46125 166.8794641 290.043036 0.0000000  
## C:2021-05-25-IA:2021-01-28 194.44857 138.0079360 250.889214 0.0000000  
## IA:2021-05-25-IA:2021-01-28 301.43725 244.9966110 357.877889 0.0000000  
## IA:2021-02-05-C:2021-02-05 4.90000 -72.9954823 82.795482 1.0000000  
## C:2021-02-12-C:2021-02-05 32.90000 -44.9954823 110.795482 0.9997429  
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## IA:2021-03-15-IA:2021-02-05 25.19000 -52.7054823 103.085482 0.9999994  
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## IA:2021-04-15-IA:2021-02-05 179.50000 101.6045177 257.395482 0.0000000  
## C:2021-04-30-IA:2021-02-05 125.91375 64.3319641 187.495536 0.0000000  
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## IA:2021-04-15-C:2021-02-12 151.50000 73.6045177 229.395482 0.0000000  
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## IA:2021-04-30-C:2021-02-12 160.16125 98.5794641 221.743036 0.0000000  
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## C:2021-05-25-IA:2021-02-12 151.44857 95.0079360 207.889214 0.0000000  
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## IA:2021-03-30-C:2021-02-26 73.20550 -4.6899823 151.100982 0.1048660  
## C:2021-04-15-C:2021-02-26 118.35550 40.4600177 196.250982 0.0000044  
## IA:2021-04-15-C:2021-02-26 180.70550 102.8100177 258.600982 0.0000000  
## C:2021-04-30-C:2021-02-26 127.11925 65.5374641 188.701036 0.0000000  
## IA:2021-04-30-C:2021-02-26 189.36675 127.7849641 250.948536 0.0000000  
## C:2021-05-25-C:2021-02-26 155.35408 98.9134360 211.794714 0.0000000  
## IA:2021-05-25-C:2021-02-26 262.34275 205.9021110 318.783389 0.0000000  
## C:2021-03-15-IA:2021-02-26 11.15000 -66.7454823 89.045482 1.0000000  
## IA:2021-03-15-IA:2021-02-26 17.30500 -60.5904823 95.200482 1.0000000  
## C:2021-03-30-IA:2021-02-26 35.36500 -42.5304823 113.260482 0.9989616  
## IA:2021-03-30-IA:2021-02-26 64.11500 -13.7804823 142.010482 0.3333467  
## C:2021-04-15-IA:2021-02-26 109.26500 31.3695177 187.160482 0.0000530  
## IA:2021-04-15-IA:2021-02-26 171.61500 93.7195177 249.510482 0.0000000  
## C:2021-04-30-IA:2021-02-26 118.02875 56.4469641 179.610536 0.0000000  
## IA:2021-04-30-IA:2021-02-26 180.27625 118.6944641 241.858036 0.0000000  
## C:2021-05-25-IA:2021-02-26 146.26358 89.8229360 202.704214 0.0000000  
## IA:2021-05-25-IA:2021-02-26 253.25225 196.8116110 309.692889 0.0000000  
## IA:2021-03-15-C:2021-03-15 6.15500 -71.7404823 84.050482 1.0000000  
## C:2021-03-30-C:2021-03-15 24.21500 -53.6804823 102.110482 0.9999998  
## IA:2021-03-30-C:2021-03-15 52.96500 -24.9304823 130.860482 0.7689333  
## C:2021-04-15-C:2021-03-15 98.11500 20.2195177 176.010482 0.0008412  
## IA:2021-04-15-C:2021-03-15 160.46500 82.5695177 238.360482 0.0000000  
## C:2021-04-30-C:2021-03-15 106.87875 45.2969641 168.460536 0.0000000  
## IA:2021-04-30-C:2021-03-15 169.12625 107.5444641 230.708036 0.0000000  
## C:2021-05-25-C:2021-03-15 135.11358 78.6729360 191.554214 0.0000000  
## IA:2021-05-25-C:2021-03-15 242.10225 185.6616110 298.542889 0.0000000  
## C:2021-03-30-IA:2021-03-15 18.06000 -59.8354823 95.955482 1.0000000  
## IA:2021-03-30-IA:2021-03-15 46.81000 -31.0854823 124.705482 0.9296895  
## C:2021-04-15-IA:2021-03-15 91.96000 14.0645177 169.855482 0.0033445  
## IA:2021-04-15-IA:2021-03-15 154.31000 76.4145177 232.205482 0.0000000  
## C:2021-04-30-IA:2021-03-15 100.72375 39.1419641 162.305536 0.0000003  
## IA:2021-04-30-IA:2021-03-15 162.97125 101.3894641 224.553036 0.0000000  
## C:2021-05-25-IA:2021-03-15 128.95858 72.5179360 185.399214 0.0000000  
## IA:2021-05-25-IA:2021-03-15 235.94725 179.5066110 292.387889 0.0000000  
## IA:2021-03-30-C:2021-03-30 28.75000 -49.1454823 106.645482 0.9999857  
## C:2021-04-15-C:2021-03-30 73.90000 -3.9954823 151.795482 0.0945141  
## IA:2021-04-15-C:2021-03-30 136.25000 58.3545177 214.145482 0.0000000  
## C:2021-04-30-C:2021-03-30 82.66375 21.0819641 144.245536 0.0001770  
## IA:2021-04-30-C:2021-03-30 144.91125 83.3294641 206.493036 0.0000000  
## C:2021-05-25-C:2021-03-30 110.89858 54.4579360 167.339214 0.0000000  
## IA:2021-05-25-C:2021-03-30 217.88725 161.4466110 274.327889 0.0000000  
## C:2021-04-15-IA:2021-03-30 45.15000 -32.7454823 123.045482 0.9541199  
## IA:2021-04-15-IA:2021-03-30 107.50000 29.6045177 185.395482 0.0000839  
## C:2021-04-30-IA:2021-03-30 53.91375 -7.6680359 115.495536 0.2082607  
## IA:2021-04-30-IA:2021-03-30 116.16125 54.5794641 177.743036 0.0000000  
## C:2021-05-25-IA:2021-03-30 82.14858 25.7079360 138.589214 0.0000177  
## IA:2021-05-25-IA:2021-03-30 189.13725 132.6966110 245.577889 0.0000000  
## IA:2021-04-15-C:2021-04-15 62.35000 -15.5454823 140.245482 0.3978982  
## C:2021-04-30-C:2021-04-15 8.76375 -52.8180359 70.345536 1.0000000  
## IA:2021-04-30-C:2021-04-15 71.01125 9.4294641 132.593036 0.0052610  
## C:2021-05-25-C:2021-04-15 36.99857 -19.4420640 93.439214 0.8303125  
## IA:2021-05-25-C:2021-04-15 143.98725 87.5466110 200.427889 0.0000000  
## C:2021-04-30-IA:2021-04-15 -53.58625 -115.1680359 7.995536 0.2192696  
## IA:2021-04-30-IA:2021-04-15 8.66125 -52.9205359 70.243036 1.0000000  
## C:2021-05-25-IA:2021-04-15 -25.35143 -81.7920640 31.089214 0.9991495  
## IA:2021-05-25-IA:2021-04-15 81.63725 25.1966110 138.077889 0.0000214  
## IA:2021-04-30-C:2021-04-30 62.24750 23.2997588 101.195241 0.0000007  
## C:2021-05-25-C:2021-04-30 28.23482 -1.9339656 58.403616 0.1096674  
## IA:2021-05-25-C:2021-04-30 135.22350 105.0547094 165.392291 0.0000000  
## C:2021-05-25-IA:2021-04-30 -34.01268 -64.1814656 -3.843884 0.0079400  
## IA:2021-05-25-IA:2021-04-30 72.97600 42.8072094 103.144791 0.0000000  
## IA:2021-05-25-C:2021-05-25 106.98868 89.5707156 124.406634 0.0000000

Efecto de la IA sobre el largo

t2way(Largo ~ Condición + Fechas + Condición:Fechas, data = a,)

## Call:  
## t2way(formula = Largo ~ Condición + Fechas + Condición:Fechas,   
## data = a)  
##   
## value p.value  
## Condición 1.5741 0.212  
## Fechas 21776.8624 0.001  
## Condición:Fechas 139.6078 0.001

anovalargo <- aov(Largo ~ Condición + Fechas + Condición:Fechas, data = a)  
anova(anovalargo)

## Analysis of Variance Table  
##   
## Response: Largo  
## Df Sum Sq Mean Sq F value Pr(>F)   
## Condición 1 437 437.46 118.4679 < 2.2e-16 \*\*\*  
## Fechas 16 43124 2695.27 729.8983 < 2.2e-16 \*\*\*  
## Condición:Fechas 16 385 24.06 6.5163 1.964e-14 \*\*\*  
## Residuals 1526 5635 3.69   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

TukeyHSD(anovalargo)

## Tukey multiple comparisons of means  
## 95% family-wise confidence level  
##   
## Fit: aov(formula = Largo ~ Condición + Fechas + Condición:Fechas, data = a)  
##   
## $Condición  
## diff lwr upr p adj  
## IA-C 1.059103 0.8682358 1.249969 0  
##   
## $Fechas  
## diff lwr upr p adj  
## 2020-10-14-2020-10-05 0.077500 -1.411099805 1.5660998 1.0000000  
## 2020-10-26-2020-10-05 0.737500 -0.751099805 2.2260998 0.9542329  
## 2020-11-05-2020-10-05 1.035000 -0.453599805 2.5235998 0.5721170  
## 2020-11-14-2020-10-05 1.585000 0.096400195 3.0735998 0.0236012  
## 2020-11-25-2020-10-05 2.395000 0.906400195 3.8835998 0.0000039  
## 2020-12-05-2020-10-05 3.062500 1.573900195 4.5510998 0.0000000  
## 2021-01-22-2020-10-05 6.457500 4.968900195 7.9460998 0.0000000  
## 2021-01-28-2020-10-05 4.555000 3.066400195 6.0435998 0.0000000  
## 2021-02-05-2020-10-05 6.357500 4.868900195 7.8460998 0.0000000  
## 2021-02-12-2020-10-05 8.380000 6.891400195 9.8685998 0.0000000  
## 2021-02-26-2020-10-05 7.820000 6.331400195 9.3085998 0.0000000  
## 2021-03-15-2020-10-05 9.292500 7.803900195 10.7810998 0.0000000  
## 2021-03-30-2020-10-05 11.487500 9.998900195 12.9760998 0.0000000  
## 2021-04-15-2020-10-05 13.420000 11.931400195 14.9085998 0.0000000  
## 2021-04-30-2020-10-05 13.436250 12.259408523 14.6130915 0.0000000  
## 2021-05-25-2020-10-05 14.705125 13.626531970 15.7837180 0.0000000  
## 2020-10-26-2020-10-14 0.660000 -0.828599805 2.1485998 0.9838017  
## 2020-11-05-2020-10-14 0.957500 -0.531099805 2.4460998 0.7068768  
## 2020-11-14-2020-10-14 1.507500 0.018900195 2.9960998 0.0434022  
## 2020-11-25-2020-10-14 2.317500 0.828900195 3.8060998 0.0000107  
## 2020-12-05-2020-10-14 2.985000 1.496400195 4.4735998 0.0000000  
## 2021-01-22-2020-10-14 6.380000 4.891400195 7.8685998 0.0000000  
## 2021-01-28-2020-10-14 4.477500 2.988900195 5.9660998 0.0000000  
## 2021-02-05-2020-10-14 6.280000 4.791400195 7.7685998 0.0000000  
## 2021-02-12-2020-10-14 8.302500 6.813900195 9.7910998 0.0000000  
## 2021-02-26-2020-10-14 7.742500 6.253900195 9.2310998 0.0000000  
## 2021-03-15-2020-10-14 9.215000 7.726400195 10.7035998 0.0000000  
## 2021-03-30-2020-10-14 11.410000 9.921400195 12.8985998 0.0000000  
## 2021-04-15-2020-10-14 13.342500 11.853900195 14.8310998 0.0000000  
## 2021-04-30-2020-10-14 13.358750 12.181908523 14.5355915 0.0000000  
## 2021-05-25-2020-10-14 14.627625 13.549031970 15.7062180 0.0000000  
## 2020-11-05-2020-10-26 0.297500 -1.191099805 1.7860998 0.9999994  
## 2020-11-14-2020-10-26 0.847500 -0.641099805 2.3360998 0.8627243  
## 2020-11-25-2020-10-26 1.657500 0.168900195 3.1460998 0.0128198  
## 2020-12-05-2020-10-26 2.325000 0.836400195 3.8135998 0.0000097  
## 2021-01-22-2020-10-26 5.720000 4.231400195 7.2085998 0.0000000  
## 2021-01-28-2020-10-26 3.817500 2.328900195 5.3060998 0.0000000  
## 2021-02-05-2020-10-26 5.620000 4.131400195 7.1085998 0.0000000  
## 2021-02-12-2020-10-26 7.642500 6.153900195 9.1310998 0.0000000  
## 2021-02-26-2020-10-26 7.082500 5.593900195 8.5710998 0.0000000  
## 2021-03-15-2020-10-26 8.555000 7.066400195 10.0435998 0.0000000  
## 2021-03-30-2020-10-26 10.750000 9.261400195 12.2385998 0.0000000  
## 2021-04-15-2020-10-26 12.682500 11.193900195 14.1710998 0.0000000  
## 2021-04-30-2020-10-26 12.698750 11.521908523 13.8755915 0.0000000  
## 2021-05-25-2020-10-26 13.967625 12.889031970 15.0462180 0.0000000  
## 2020-11-14-2020-11-05 0.550000 -0.938599805 2.0385998 0.9977379  
## 2020-11-25-2020-11-05 1.360000 -0.128599805 2.8485998 0.1211424  
## 2020-12-05-2020-11-05 2.027500 0.538900195 3.5160998 0.0003300  
## 2021-01-22-2020-11-05 5.422500 3.933900195 6.9110998 0.0000000  
## 2021-01-28-2020-11-05 3.520000 2.031400195 5.0085998 0.0000000  
## 2021-02-05-2020-11-05 5.322500 3.833900195 6.8110998 0.0000000  
## 2021-02-12-2020-11-05 7.345000 5.856400195 8.8335998 0.0000000  
## 2021-02-26-2020-11-05 6.785000 5.296400195 8.2735998 0.0000000  
## 2021-03-15-2020-11-05 8.257500 6.768900195 9.7460998 0.0000000  
## 2021-03-30-2020-11-05 10.452500 8.963900195 11.9410998 0.0000000  
## 2021-04-15-2020-11-05 12.385000 10.896400195 13.8735998 0.0000000  
## 2021-04-30-2020-11-05 12.401250 11.224408523 13.5780915 0.0000000  
## 2021-05-25-2020-11-05 13.670125 12.591531970 14.7487180 0.0000000  
## 2020-11-25-2020-11-14 0.810000 -0.678599805 2.2985998 0.9014307  
## 2020-12-05-2020-11-14 1.477500 -0.011099805 2.9660998 0.0542610  
## 2021-01-22-2020-11-14 4.872500 3.383900195 6.3610998 0.0000000  
## 2021-01-28-2020-11-14 2.970000 1.481400195 4.4585998 0.0000000  
## 2021-02-05-2020-11-14 4.772500 3.283900195 6.2610998 0.0000000  
## 2021-02-12-2020-11-14 6.795000 5.306400195 8.2835998 0.0000000  
## 2021-02-26-2020-11-14 6.235000 4.746400195 7.7235998 0.0000000  
## 2021-03-15-2020-11-14 7.707500 6.218900195 9.1960998 0.0000000  
## 2021-03-30-2020-11-14 9.902500 8.413900195 11.3910998 0.0000000  
## 2021-04-15-2020-11-14 11.835000 10.346400195 13.3235998 0.0000000  
## 2021-04-30-2020-11-14 11.851250 10.674408523 13.0280915 0.0000000  
## 2021-05-25-2020-11-14 13.120125 12.041531970 14.1987180 0.0000000  
## 2020-12-05-2020-11-25 0.667500 -0.821099805 2.1560998 0.9818872  
## 2021-01-22-2020-11-25 4.062500 2.573900195 5.5510998 0.0000000  
## 2021-01-28-2020-11-25 2.160000 0.671400195 3.6485998 0.0000728  
## 2021-02-05-2020-11-25 3.962500 2.473900195 5.4510998 0.0000000  
## 2021-02-12-2020-11-25 5.985000 4.496400195 7.4735998 0.0000000  
## 2021-02-26-2020-11-25 5.425000 3.936400195 6.9135998 0.0000000  
## 2021-03-15-2020-11-25 6.897500 5.408900195 8.3860998 0.0000000  
## 2021-03-30-2020-11-25 9.092500 7.603900195 10.5810998 0.0000000  
## 2021-04-15-2020-11-25 11.025000 9.536400195 12.5135998 0.0000000  
## 2021-04-30-2020-11-25 11.041250 9.864408523 12.2180915 0.0000000  
## 2021-05-25-2020-11-25 12.310125 11.231531970 13.3887180 0.0000000  
## 2021-01-22-2020-12-05 3.395000 1.906400195 4.8835998 0.0000000  
## 2021-01-28-2020-12-05 1.492500 0.003900195 2.9810998 0.0485723  
## 2021-02-05-2020-12-05 3.295000 1.806400195 4.7835998 0.0000000  
## 2021-02-12-2020-12-05 5.317500 3.828900195 6.8060998 0.0000000  
## 2021-02-26-2020-12-05 4.757500 3.268900195 6.2460998 0.0000000  
## 2021-03-15-2020-12-05 6.230000 4.741400195 7.7185998 0.0000000  
## 2021-03-30-2020-12-05 8.425000 6.936400195 9.9135998 0.0000000  
## 2021-04-15-2020-12-05 10.357500 8.868900195 11.8460998 0.0000000  
## 2021-04-30-2020-12-05 10.373750 9.196908523 11.5505915 0.0000000  
## 2021-05-25-2020-12-05 11.642625 10.564031970 12.7212180 0.0000000  
## 2021-01-28-2021-01-22 -1.902500 -3.391099805 -0.4139002 0.0012507  
## 2021-02-05-2021-01-22 -0.100000 -1.588599805 1.3885998 1.0000000  
## 2021-02-12-2021-01-22 1.922500 0.433900195 3.4110998 0.0010169  
## 2021-02-26-2021-01-22 1.362500 -0.126099805 2.8510998 0.1192366  
## 2021-03-15-2021-01-22 2.835000 1.346400195 4.3235998 0.0000000  
## 2021-03-30-2021-01-22 5.030000 3.541400195 6.5185998 0.0000000  
## 2021-04-15-2021-01-22 6.962500 5.473900195 8.4510998 0.0000000  
## 2021-04-30-2021-01-22 6.978750 5.801908523 8.1555915 0.0000000  
## 2021-05-25-2021-01-22 8.247625 7.169031970 9.3262180 0.0000000  
## 2021-02-05-2021-01-28 1.802500 0.313900195 3.2910998 0.0033900  
## 2021-02-12-2021-01-28 3.825000 2.336400195 5.3135998 0.0000000  
## 2021-02-26-2021-01-28 3.265000 1.776400195 4.7535998 0.0000000  
## 2021-03-15-2021-01-28 4.737500 3.248900195 6.2260998 0.0000000  
## 2021-03-30-2021-01-28 6.932500 5.443900195 8.4210998 0.0000000  
## 2021-04-15-2021-01-28 8.865000 7.376400195 10.3535998 0.0000000  
## 2021-04-30-2021-01-28 8.881250 7.704408523 10.0580915 0.0000000  
## 2021-05-25-2021-01-28 10.150125 9.071531970 11.2287180 0.0000000  
## 2021-02-12-2021-02-05 2.022500 0.533900195 3.5110998 0.0003487  
## 2021-02-26-2021-02-05 1.462500 -0.026099805 2.9510998 0.0605064  
## 2021-03-15-2021-02-05 2.935000 1.446400195 4.4235998 0.0000000  
## 2021-03-30-2021-02-05 5.130000 3.641400195 6.6185998 0.0000000  
## 2021-04-15-2021-02-05 7.062500 5.573900195 8.5510998 0.0000000  
## 2021-04-30-2021-02-05 7.078750 5.901908523 8.2555915 0.0000000  
## 2021-05-25-2021-02-05 8.347625 7.269031970 9.4262180 0.0000000  
## 2021-02-26-2021-02-12 -0.560000 -2.048599805 0.9285998 0.9972166  
## 2021-03-15-2021-02-12 0.912500 -0.576099805 2.4010998 0.7774232  
## 2021-03-30-2021-02-12 3.107500 1.618900195 4.5960998 0.0000000  
## 2021-04-15-2021-02-12 5.040000 3.551400195 6.5285998 0.0000000  
## 2021-04-30-2021-02-12 5.056250 3.879408523 6.2330915 0.0000000  
## 2021-05-25-2021-02-12 6.325125 5.246531970 7.4037180 0.0000000  
## 2021-03-15-2021-02-26 1.472500 -0.016099805 2.9610998 0.0562791  
## 2021-03-30-2021-02-26 3.667500 2.178900195 5.1560998 0.0000000  
## 2021-04-15-2021-02-26 5.600000 4.111400195 7.0885998 0.0000000  
## 2021-04-30-2021-02-26 5.616250 4.439408523 6.7930915 0.0000000  
## 2021-05-25-2021-02-26 6.885125 5.806531970 7.9637180 0.0000000  
## 2021-03-30-2021-03-15 2.195000 0.706400195 3.6835998 0.0000481  
## 2021-04-15-2021-03-15 4.127500 2.638900195 5.6160998 0.0000000  
## 2021-04-30-2021-03-15 4.143750 2.966908523 5.3205915 0.0000000  
## 2021-05-25-2021-03-15 5.412625 4.334031970 6.4912180 0.0000000  
## 2021-04-15-2021-03-30 1.932500 0.443900195 3.4210998 0.0009162  
## 2021-04-30-2021-03-30 1.948750 0.771908523 3.1255915 0.0000016  
## 2021-05-25-2021-03-30 3.217625 2.139031970 4.2962180 0.0000000  
## 2021-04-30-2021-04-15 0.016250 -1.160591477 1.1930915 1.0000000  
## 2021-05-25-2021-04-15 1.285125 0.206531970 2.3637180 0.0044671  
## 2021-05-25-2021-04-30 1.268875 0.692342774 1.8454072 0.0000000  
##   
## $`Condición:Fechas`  
## diff lwr upr p adj  
## IA:2020-10-05-C:2020-10-05 -4.150000e-01 -2.7346928323 1.9046928 1.0000000  
## C:2020-10-14-C:2020-10-05 -2.600000e-01 -2.5796928323 2.0596928 1.0000000  
## IA:2020-10-14-C:2020-10-05 2.629008e-13 -2.3196928323 2.3196928 1.0000000  
## C:2020-10-26-C:2020-10-05 5.450000e-01 -1.7746928323 2.8646928 1.0000000  
## IA:2020-10-26-C:2020-10-05 5.150000e-01 -1.8046928323 2.8346928 1.0000000  
## C:2020-11-05-C:2020-10-05 1.000000e+00 -1.3196928323 3.3196928 0.9996138  
## IA:2020-11-05-C:2020-10-05 6.550000e-01 -1.6646928323 2.9746928 1.0000000  
## C:2020-11-14-C:2020-10-05 1.705000e+00 -0.6146928323 4.0246928 0.6037892  
## IA:2020-11-14-C:2020-10-05 1.050000e+00 -1.2696928323 3.3696928 0.9990178  
## C:2020-11-25-C:2020-10-05 2.290000e+00 -0.0296928323 4.6096928 0.0589649  
## IA:2020-11-25-C:2020-10-05 2.085000e+00 -0.2346928323 4.4046928 0.1645181  
## C:2020-12-05-C:2020-10-05 2.735000e+00 0.4153071677 5.0546928 0.0034308  
## IA:2020-12-05-C:2020-10-05 2.975000e+00 0.6553071677 5.2946928 0.0005524  
## C:2021-01-22-C:2020-10-05 6.820000e+00 4.5003071677 9.1396928 0.0000000  
## IA:2021-01-22-C:2020-10-05 5.680000e+00 3.3603071677 7.9996928 0.0000000  
## C:2021-01-28-C:2020-10-05 4.655000e+00 2.3353071677 6.9746928 0.0000000  
## IA:2021-01-28-C:2020-10-05 4.040000e+00 1.7203071677 6.3596928 0.0000000  
## C:2021-02-05-C:2020-10-05 6.100000e+00 3.7803071677 8.4196928 0.0000000  
## IA:2021-02-05-C:2020-10-05 6.200000e+00 3.8803071677 8.5196928 0.0000000  
## C:2021-02-12-C:2020-10-05 8.520000e+00 6.2003071677 10.8396928 0.0000000  
## IA:2021-02-12-C:2020-10-05 7.825000e+00 5.5053071677 10.1446928 0.0000000  
## C:2021-02-26-C:2020-10-05 7.350000e+00 5.0303071677 9.6696928 0.0000000  
## IA:2021-02-26-C:2020-10-05 7.875000e+00 5.5553071677 10.1946928 0.0000000  
## C:2021-03-15-C:2020-10-05 9.345000e+00 7.0253071677 11.6646928 0.0000000  
## IA:2021-03-15-C:2020-10-05 8.825000e+00 6.5053071677 11.1446928 0.0000000  
## C:2021-03-30-C:2020-10-05 1.087000e+01 8.5503071677 13.1896928 0.0000000  
## IA:2021-03-30-C:2020-10-05 1.169000e+01 9.3703071677 14.0096928 0.0000000  
## C:2021-04-15-C:2020-10-05 1.243500e+01 10.1153071677 14.7546928 0.0000000  
## IA:2021-04-15-C:2020-10-05 1.399000e+01 11.6703071677 16.3096928 0.0000000  
## C:2021-04-30-C:2020-10-05 1.251500e+01 10.6811217945 14.3488782 0.0000000  
## IA:2021-04-30-C:2020-10-05 1.394250e+01 12.1086217945 15.7763782 0.0000000  
## C:2021-05-25-C:2020-10-05 1.357975e+01 11.8989728616 15.2605271 0.0000000  
## IA:2021-05-25-C:2020-10-05 1.541550e+01 13.7347228616 17.0962771 0.0000000  
## C:2020-10-14-IA:2020-10-05 1.550000e-01 -2.1646928323 2.4746928 1.0000000  
## IA:2020-10-14-IA:2020-10-05 4.150000e-01 -1.9046928323 2.7346928 1.0000000  
## C:2020-10-26-IA:2020-10-05 9.600000e-01 -1.3596928323 3.2796928 0.9998300  
## IA:2020-10-26-IA:2020-10-05 9.300000e-01 -1.3896928323 3.2496928 0.9999123  
## C:2020-11-05-IA:2020-10-05 1.415000e+00 -0.9046928323 3.7346928 0.9169560  
## IA:2020-11-05-IA:2020-10-05 1.070000e+00 -1.2496928323 3.3896928 0.9986109  
## C:2020-11-14-IA:2020-10-05 2.120000e+00 -0.1996928323 4.4396928 0.1401144  
## IA:2020-11-14-IA:2020-10-05 1.465000e+00 -0.8546928323 3.7846928 0.8806775  
## C:2020-11-25-IA:2020-10-05 2.705000e+00 0.3853071677 5.0246928 0.0042534  
## IA:2020-11-25-IA:2020-10-05 2.500000e+00 0.1803071677 4.8196928 0.0169524  
## C:2020-12-05-IA:2020-10-05 3.150000e+00 0.8303071677 5.4696928 0.0001303  
## IA:2020-12-05-IA:2020-10-05 3.390000e+00 1.0703071677 5.7096928 0.0000156  
## C:2021-01-22-IA:2020-10-05 7.235000e+00 4.9153071677 9.5546928 0.0000000  
## IA:2021-01-22-IA:2020-10-05 6.095000e+00 3.7753071677 8.4146928 0.0000000  
## C:2021-01-28-IA:2020-10-05 5.070000e+00 2.7503071677 7.3896928 0.0000000  
## IA:2021-01-28-IA:2020-10-05 4.455000e+00 2.1353071677 6.7746928 0.0000000  
## C:2021-02-05-IA:2020-10-05 6.515000e+00 4.1953071677 8.8346928 0.0000000  
## IA:2021-02-05-IA:2020-10-05 6.615000e+00 4.2953071677 8.9346928 0.0000000  
## C:2021-02-12-IA:2020-10-05 8.935000e+00 6.6153071677 11.2546928 0.0000000  
## IA:2021-02-12-IA:2020-10-05 8.240000e+00 5.9203071677 10.5596928 0.0000000  
## C:2021-02-26-IA:2020-10-05 7.765000e+00 5.4453071677 10.0846928 0.0000000  
## IA:2021-02-26-IA:2020-10-05 8.290000e+00 5.9703071677 10.6096928 0.0000000  
## C:2021-03-15-IA:2020-10-05 9.760000e+00 7.4403071677 12.0796928 0.0000000  
## IA:2021-03-15-IA:2020-10-05 9.240000e+00 6.9203071677 11.5596928 0.0000000  
## C:2021-03-30-IA:2020-10-05 1.128500e+01 8.9653071677 13.6046928 0.0000000  
## IA:2021-03-30-IA:2020-10-05 1.210500e+01 9.7853071677 14.4246928 0.0000000  
## C:2021-04-15-IA:2020-10-05 1.285000e+01 10.5303071677 15.1696928 0.0000000  
## IA:2021-04-15-IA:2020-10-05 1.440500e+01 12.0853071677 16.7246928 0.0000000  
## C:2021-04-30-IA:2020-10-05 1.293000e+01 11.0961217945 14.7638782 0.0000000  
## IA:2021-04-30-IA:2020-10-05 1.435750e+01 12.5236217945 16.1913782 0.0000000  
## C:2021-05-25-IA:2020-10-05 1.399475e+01 12.3139728616 15.6755271 0.0000000  
## IA:2021-05-25-IA:2020-10-05 1.583050e+01 14.1497228616 17.5112771 0.0000000  
## IA:2020-10-14-C:2020-10-14 2.600000e-01 -2.0596928323 2.5796928 1.0000000  
## C:2020-10-26-C:2020-10-14 8.050000e-01 -1.5146928323 3.1246928 0.9999966  
## IA:2020-10-26-C:2020-10-14 7.750000e-01 -1.5446928323 3.0946928 0.9999986  
## C:2020-11-05-C:2020-10-14 1.260000e+00 -1.0596928323 3.5796928 0.9805267  
## IA:2020-11-05-C:2020-10-14 9.150000e-01 -1.4046928323 3.2346928 0.9999380  
## C:2020-11-14-C:2020-10-14 1.965000e+00 -0.3546928323 4.2846928 0.2715164  
## IA:2020-11-14-C:2020-10-14 1.310000e+00 -1.0096928323 3.6296928 0.9670098  
## C:2020-11-25-C:2020-10-14 2.550000e+00 0.2303071677 4.8696928 0.0122739  
## IA:2020-11-25-C:2020-10-14 2.345000e+00 0.0253071677 4.6646928 0.0433111  
## C:2020-12-05-C:2020-10-14 2.995000e+00 0.6753071677 5.3146928 0.0004706  
## IA:2020-12-05-C:2020-10-14 3.235000e+00 0.9153071677 5.5546928 0.0000626  
## C:2021-01-22-C:2020-10-14 7.080000e+00 4.7603071677 9.3996928 0.0000000  
## IA:2021-01-22-C:2020-10-14 5.940000e+00 3.6203071677 8.2596928 0.0000000  
## C:2021-01-28-C:2020-10-14 4.915000e+00 2.5953071677 7.2346928 0.0000000  
## IA:2021-01-28-C:2020-10-14 4.300000e+00 1.9803071677 6.6196928 0.0000000  
## C:2021-02-05-C:2020-10-14 6.360000e+00 4.0403071677 8.6796928 0.0000000  
## IA:2021-02-05-C:2020-10-14 6.460000e+00 4.1403071677 8.7796928 0.0000000  
## C:2021-02-12-C:2020-10-14 8.780000e+00 6.4603071677 11.0996928 0.0000000  
## IA:2021-02-12-C:2020-10-14 8.085000e+00 5.7653071677 10.4046928 0.0000000  
## C:2021-02-26-C:2020-10-14 7.610000e+00 5.2903071677 9.9296928 0.0000000  
## IA:2021-02-26-C:2020-10-14 8.135000e+00 5.8153071677 10.4546928 0.0000000  
## C:2021-03-15-C:2020-10-14 9.605000e+00 7.2853071677 11.9246928 0.0000000  
## IA:2021-03-15-C:2020-10-14 9.085000e+00 6.7653071677 11.4046928 0.0000000  
## C:2021-03-30-C:2020-10-14 1.113000e+01 8.8103071677 13.4496928 0.0000000  
## IA:2021-03-30-C:2020-10-14 1.195000e+01 9.6303071677 14.2696928 0.0000000  
## C:2021-04-15-C:2020-10-14 1.269500e+01 10.3753071677 15.0146928 0.0000000  
## IA:2021-04-15-C:2020-10-14 1.425000e+01 11.9303071677 16.5696928 0.0000000  
## C:2021-04-30-C:2020-10-14 1.277500e+01 10.9411217945 14.6088782 0.0000000  
## IA:2021-04-30-C:2020-10-14 1.420250e+01 12.3686217945 16.0363782 0.0000000  
## C:2021-05-25-C:2020-10-14 1.383975e+01 12.1589728616 15.5205271 0.0000000  
## IA:2021-05-25-C:2020-10-14 1.567550e+01 13.9947228616 17.3562771 0.0000000  
## C:2020-10-26-IA:2020-10-14 5.450000e-01 -1.7746928323 2.8646928 1.0000000  
## IA:2020-10-26-IA:2020-10-14 5.150000e-01 -1.8046928323 2.8346928 1.0000000  
## C:2020-11-05-IA:2020-10-14 1.000000e+00 -1.3196928323 3.3196928 0.9996138  
## IA:2020-11-05-IA:2020-10-14 6.550000e-01 -1.6646928323 2.9746928 1.0000000  
## C:2020-11-14-IA:2020-10-14 1.705000e+00 -0.6146928323 4.0246928 0.6037892  
## IA:2020-11-14-IA:2020-10-14 1.050000e+00 -1.2696928323 3.3696928 0.9990178  
## C:2020-11-25-IA:2020-10-14 2.290000e+00 -0.0296928323 4.6096928 0.0589649  
## IA:2020-11-25-IA:2020-10-14 2.085000e+00 -0.2346928323 4.4046928 0.1645181  
## C:2020-12-05-IA:2020-10-14 2.735000e+00 0.4153071677 5.0546928 0.0034308  
## IA:2020-12-05-IA:2020-10-14 2.975000e+00 0.6553071677 5.2946928 0.0005524  
## C:2021-01-22-IA:2020-10-14 6.820000e+00 4.5003071677 9.1396928 0.0000000  
## IA:2021-01-22-IA:2020-10-14 5.680000e+00 3.3603071677 7.9996928 0.0000000  
## C:2021-01-28-IA:2020-10-14 4.655000e+00 2.3353071677 6.9746928 0.0000000  
## IA:2021-01-28-IA:2020-10-14 4.040000e+00 1.7203071677 6.3596928 0.0000000  
## C:2021-02-05-IA:2020-10-14 6.100000e+00 3.7803071677 8.4196928 0.0000000  
## IA:2021-02-05-IA:2020-10-14 6.200000e+00 3.8803071677 8.5196928 0.0000000  
## C:2021-02-12-IA:2020-10-14 8.520000e+00 6.2003071677 10.8396928 0.0000000  
## IA:2021-02-12-IA:2020-10-14 7.825000e+00 5.5053071677 10.1446928 0.0000000  
## C:2021-02-26-IA:2020-10-14 7.350000e+00 5.0303071677 9.6696928 0.0000000  
## IA:2021-02-26-IA:2020-10-14 7.875000e+00 5.5553071677 10.1946928 0.0000000  
## C:2021-03-15-IA:2020-10-14 9.345000e+00 7.0253071677 11.6646928 0.0000000  
## IA:2021-03-15-IA:2020-10-14 8.825000e+00 6.5053071677 11.1446928 0.0000000  
## C:2021-03-30-IA:2020-10-14 1.087000e+01 8.5503071677 13.1896928 0.0000000  
## IA:2021-03-30-IA:2020-10-14 1.169000e+01 9.3703071677 14.0096928 0.0000000  
## C:2021-04-15-IA:2020-10-14 1.243500e+01 10.1153071677 14.7546928 0.0000000  
## IA:2021-04-15-IA:2020-10-14 1.399000e+01 11.6703071677 16.3096928 0.0000000  
## C:2021-04-30-IA:2020-10-14 1.251500e+01 10.6811217945 14.3488782 0.0000000  
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## C:2021-05-25-IA:2020-10-14 1.357975e+01 11.8989728616 15.2605271 0.0000000  
## IA:2021-05-25-IA:2020-10-14 1.541550e+01 13.7347228616 17.0962771 0.0000000  
## IA:2020-10-26-C:2020-10-26 -3.000000e-02 -2.3496928323 2.2896928 1.0000000  
## C:2020-11-05-C:2020-10-26 4.550000e-01 -1.8646928323 2.7746928 1.0000000  
## IA:2020-11-05-C:2020-10-26 1.100000e-01 -2.2096928323 2.4296928 1.0000000  
## C:2020-11-14-C:2020-10-26 1.160000e+00 -1.1596928323 3.4796928 0.9944332  
## IA:2020-11-14-C:2020-10-26 5.050000e-01 -1.8146928323 2.8246928 1.0000000  
## C:2020-11-25-C:2020-10-26 1.745000e+00 -0.5746928323 4.0646928 0.5484275  
## IA:2020-11-25-C:2020-10-26 1.540000e+00 -0.7796928323 3.8596928 0.8104007  
## C:2020-12-05-C:2020-10-26 2.190000e+00 -0.1296928323 4.5096928 0.0997657  
## IA:2020-12-05-C:2020-10-26 2.430000e+00 0.1103071677 4.7496928 0.0262102  
## C:2021-01-22-C:2020-10-26 6.275000e+00 3.9553071677 8.5946928 0.0000000  
## IA:2021-01-22-C:2020-10-26 5.135000e+00 2.8153071677 7.4546928 0.0000000  
## C:2021-01-28-C:2020-10-26 4.110000e+00 1.7903071677 6.4296928 0.0000000  
## IA:2021-01-28-C:2020-10-26 3.495000e+00 1.1753071677 5.8146928 0.0000059  
## C:2021-02-05-C:2020-10-26 5.555000e+00 3.2353071677 7.8746928 0.0000000  
## IA:2021-02-05-C:2020-10-26 5.655000e+00 3.3353071677 7.9746928 0.0000000  
## C:2021-02-12-C:2020-10-26 7.975000e+00 5.6553071677 10.2946928 0.0000000  
## IA:2021-02-12-C:2020-10-26 7.280000e+00 4.9603071677 9.5996928 0.0000000  
## C:2021-02-26-C:2020-10-26 6.805000e+00 4.4853071677 9.1246928 0.0000000  
## IA:2021-02-26-C:2020-10-26 7.330000e+00 5.0103071677 9.6496928 0.0000000  
## C:2021-03-15-C:2020-10-26 8.800000e+00 6.4803071677 11.1196928 0.0000000  
## IA:2021-03-15-C:2020-10-26 8.280000e+00 5.9603071677 10.5996928 0.0000000  
## C:2021-03-30-C:2020-10-26 1.032500e+01 8.0053071677 12.6446928 0.0000000  
## IA:2021-03-30-C:2020-10-26 1.114500e+01 8.8253071677 13.4646928 0.0000000  
## C:2021-04-15-C:2020-10-26 1.189000e+01 9.5703071677 14.2096928 0.0000000  
## IA:2021-04-15-C:2020-10-26 1.344500e+01 11.1253071677 15.7646928 0.0000000  
## C:2021-04-30-C:2020-10-26 1.197000e+01 10.1361217945 13.8038782 0.0000000  
## IA:2021-04-30-C:2020-10-26 1.339750e+01 11.5636217945 15.2313782 0.0000000  
## C:2021-05-25-C:2020-10-26 1.303475e+01 11.3539728616 14.7155271 0.0000000  
## IA:2021-05-25-C:2020-10-26 1.487050e+01 13.1897228616 16.5512771 0.0000000  
## C:2020-11-05-IA:2020-10-26 4.850000e-01 -1.8346928323 2.8046928 1.0000000  
## IA:2020-11-05-IA:2020-10-26 1.400000e-01 -2.1796928323 2.4596928 1.0000000  
## C:2020-11-14-IA:2020-10-26 1.190000e+00 -1.1296928323 3.5096928 0.9916501  
## IA:2020-11-14-IA:2020-10-26 5.350000e-01 -1.7846928323 2.8546928 1.0000000  
## C:2020-11-25-IA:2020-10-26 1.775000e+00 -0.5446928323 4.0946928 0.5069654  
## IA:2020-11-25-IA:2020-10-26 1.570000e+00 -0.7496928323 3.8896928 0.7773329  
## C:2020-12-05-IA:2020-10-26 2.220000e+00 -0.0996928323 4.5396928 0.0856236  
## IA:2020-12-05-IA:2020-10-26 2.460000e+00 0.1403071677 4.7796928 0.0217973  
## C:2021-01-22-IA:2020-10-26 6.305000e+00 3.9853071677 8.6246928 0.0000000  
## IA:2021-01-22-IA:2020-10-26 5.165000e+00 2.8453071677 7.4846928 0.0000000  
## C:2021-01-28-IA:2020-10-26 4.140000e+00 1.8203071677 6.4596928 0.0000000  
## IA:2021-01-28-IA:2020-10-26 3.525000e+00 1.2053071677 5.8446928 0.0000044  
## C:2021-02-05-IA:2020-10-26 5.585000e+00 3.2653071677 7.9046928 0.0000000  
## IA:2021-02-05-IA:2020-10-26 5.685000e+00 3.3653071677 8.0046928 0.0000000  
## C:2021-02-12-IA:2020-10-26 8.005000e+00 5.6853071677 10.3246928 0.0000000  
## IA:2021-02-12-IA:2020-10-26 7.310000e+00 4.9903071677 9.6296928 0.0000000  
## C:2021-02-26-IA:2020-10-26 6.835000e+00 4.5153071677 9.1546928 0.0000000  
## IA:2021-02-26-IA:2020-10-26 7.360000e+00 5.0403071677 9.6796928 0.0000000  
## C:2021-03-15-IA:2020-10-26 8.830000e+00 6.5103071677 11.1496928 0.0000000  
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## C:2021-03-30-IA:2020-10-26 1.035500e+01 8.0353071677 12.6746928 0.0000000  
## IA:2021-03-30-IA:2020-10-26 1.117500e+01 8.8553071677 13.4946928 0.0000000  
## C:2021-04-15-IA:2020-10-26 1.192000e+01 9.6003071677 14.2396928 0.0000000  
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## IA:2021-04-30-IA:2020-10-26 1.342750e+01 11.5936217945 15.2613782 0.0000000  
## C:2021-05-25-IA:2020-10-26 1.306475e+01 11.3839728616 14.7455271 0.0000000  
## IA:2021-05-25-IA:2020-10-26 1.490050e+01 13.2197228616 16.5812771 0.0000000  
## IA:2020-11-05-C:2020-11-05 -3.450000e-01 -2.6646928323 1.9746928 1.0000000  
## C:2020-11-14-C:2020-11-05 7.050000e-01 -1.6146928323 3.0246928 0.9999999  
## IA:2020-11-14-C:2020-11-05 5.000000e-02 -2.2696928323 2.3696928 1.0000000  
## C:2020-11-25-C:2020-11-05 1.290000e+00 -1.0296928323 3.6096928 0.9730860  
## IA:2020-11-25-C:2020-11-05 1.085000e+00 -1.2346928323 3.4046928 0.9982156  
## C:2020-12-05-C:2020-11-05 1.735000e+00 -0.5846928323 4.0546928 0.5622936  
## IA:2020-12-05-C:2020-11-05 1.975000e+00 -0.3446928323 4.2946928 0.2612037  
## C:2021-01-22-C:2020-11-05 5.820000e+00 3.5003071677 8.1396928 0.0000000  
## IA:2021-01-22-C:2020-11-05 4.680000e+00 2.3603071677 6.9996928 0.0000000  
## C:2021-01-28-C:2020-11-05 3.655000e+00 1.3353071677 5.9746928 0.0000012  
## IA:2021-01-28-C:2020-11-05 3.040000e+00 0.7203071677 5.3596928 0.0003266  
## C:2021-02-05-C:2020-11-05 5.100000e+00 2.7803071677 7.4196928 0.0000000  
## IA:2021-02-05-C:2020-11-05 5.200000e+00 2.8803071677 7.5196928 0.0000000  
## C:2021-02-12-C:2020-11-05 7.520000e+00 5.2003071677 9.8396928 0.0000000  
## IA:2021-02-12-C:2020-11-05 6.825000e+00 4.5053071677 9.1446928 0.0000000  
## C:2021-02-26-C:2020-11-05 6.350000e+00 4.0303071677 8.6696928 0.0000000  
## IA:2021-02-26-C:2020-11-05 6.875000e+00 4.5553071677 9.1946928 0.0000000  
## C:2021-03-15-C:2020-11-05 8.345000e+00 6.0253071677 10.6646928 0.0000000  
## IA:2021-03-15-C:2020-11-05 7.825000e+00 5.5053071677 10.1446928 0.0000000  
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## IA:2021-03-30-C:2020-11-05 1.069000e+01 8.3703071677 13.0096928 0.0000000  
## C:2021-04-15-C:2020-11-05 1.143500e+01 9.1153071677 13.7546928 0.0000000  
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## IA:2021-04-30-C:2020-11-05 1.294250e+01 11.1086217945 14.7763782 0.0000000  
## C:2021-05-25-C:2020-11-05 1.257975e+01 10.8989728616 14.2605271 0.0000000  
## IA:2021-05-25-C:2020-11-05 1.441550e+01 12.7347228616 16.0962771 0.0000000  
## C:2020-11-14-IA:2020-11-05 1.050000e+00 -1.2696928323 3.3696928 0.9990178  
## IA:2020-11-14-IA:2020-11-05 3.950000e-01 -1.9246928323 2.7146928 1.0000000  
## C:2020-11-25-IA:2020-11-05 1.635000e+00 -0.6846928323 3.9546928 0.6977561  
## IA:2020-11-25-IA:2020-11-05 1.430000e+00 -0.8896928323 3.7496928 0.9069676  
## C:2020-12-05-IA:2020-11-05 2.080000e+00 -0.2396928323 4.3996928 0.1682483  
## IA:2020-12-05-IA:2020-11-05 2.320000e+00 0.0003071677 4.6396928 0.0499138  
## C:2021-01-22-IA:2020-11-05 6.165000e+00 3.8453071677 8.4846928 0.0000000  
## IA:2021-01-22-IA:2020-11-05 5.025000e+00 2.7053071677 7.3446928 0.0000000  
## C:2021-01-28-IA:2020-11-05 4.000000e+00 1.6803071677 6.3196928 0.0000000  
## IA:2021-01-28-IA:2020-11-05 3.385000e+00 1.0653071677 5.7046928 0.0000163  
## C:2021-02-05-IA:2020-11-05 5.445000e+00 3.1253071677 7.7646928 0.0000000  
## IA:2021-02-05-IA:2020-11-05 5.545000e+00 3.2253071677 7.8646928 0.0000000  
## C:2021-02-12-IA:2020-11-05 7.865000e+00 5.5453071677 10.1846928 0.0000000  
## IA:2021-02-12-IA:2020-11-05 7.170000e+00 4.8503071677 9.4896928 0.0000000  
## C:2021-02-26-IA:2020-11-05 6.695000e+00 4.3753071677 9.0146928 0.0000000  
## IA:2021-02-26-IA:2020-11-05 7.220000e+00 4.9003071677 9.5396928 0.0000000  
## C:2021-03-15-IA:2020-11-05 8.690000e+00 6.3703071677 11.0096928 0.0000000  
## IA:2021-03-15-IA:2020-11-05 8.170000e+00 5.8503071677 10.4896928 0.0000000  
## C:2021-03-30-IA:2020-11-05 1.021500e+01 7.8953071677 12.5346928 0.0000000  
## IA:2021-03-30-IA:2020-11-05 1.103500e+01 8.7153071677 13.3546928 0.0000000  
## C:2021-04-15-IA:2020-11-05 1.178000e+01 9.4603071677 14.0996928 0.0000000  
## IA:2021-04-15-IA:2020-11-05 1.333500e+01 11.0153071677 15.6546928 0.0000000  
## C:2021-04-30-IA:2020-11-05 1.186000e+01 10.0261217945 13.6938782 0.0000000  
## IA:2021-04-30-IA:2020-11-05 1.328750e+01 11.4536217945 15.1213782 0.0000000  
## C:2021-05-25-IA:2020-11-05 1.292475e+01 11.2439728616 14.6055271 0.0000000  
## IA:2021-05-25-IA:2020-11-05 1.476050e+01 13.0797228616 16.4412771 0.0000000  
## IA:2020-11-14-C:2020-11-14 -6.550000e-01 -2.9746928323 1.6646928 1.0000000  
## C:2020-11-25-C:2020-11-14 5.850000e-01 -1.7346928323 2.9046928 1.0000000  
## IA:2020-11-25-C:2020-11-14 3.800000e-01 -1.9396928323 2.6996928 1.0000000  
## C:2020-12-05-C:2020-11-14 1.030000e+00 -1.2896928323 3.3496928 0.9993159  
## IA:2020-12-05-C:2020-11-14 1.270000e+00 -1.0496928323 3.5896928 0.9782545  
## C:2021-01-22-C:2020-11-14 5.115000e+00 2.7953071677 7.4346928 0.0000000  
## IA:2021-01-22-C:2020-11-14 3.975000e+00 1.6553071677 6.2946928 0.0000000  
## C:2021-01-28-C:2020-11-14 2.950000e+00 0.6303071677 5.2696928 0.0006739  
## IA:2021-01-28-C:2020-11-14 2.335000e+00 0.0153071677 4.6546928 0.0458552  
## C:2021-02-05-C:2020-11-14 4.395000e+00 2.0753071677 6.7146928 0.0000000  
## IA:2021-02-05-C:2020-11-14 4.495000e+00 2.1753071677 6.8146928 0.0000000  
## C:2021-02-12-C:2020-11-14 6.815000e+00 4.4953071677 9.1346928 0.0000000  
## IA:2021-02-12-C:2020-11-14 6.120000e+00 3.8003071677 8.4396928 0.0000000  
## C:2021-02-26-C:2020-11-14 5.645000e+00 3.3253071677 7.9646928 0.0000000  
## IA:2021-02-26-C:2020-11-14 6.170000e+00 3.8503071677 8.4896928 0.0000000  
## C:2021-03-15-C:2020-11-14 7.640000e+00 5.3203071677 9.9596928 0.0000000  
## IA:2021-03-15-C:2020-11-14 7.120000e+00 4.8003071677 9.4396928 0.0000000  
## C:2021-03-30-C:2020-11-14 9.165000e+00 6.8453071677 11.4846928 0.0000000  
## IA:2021-03-30-C:2020-11-14 9.985000e+00 7.6653071677 12.3046928 0.0000000  
## C:2021-04-15-C:2020-11-14 1.073000e+01 8.4103071677 13.0496928 0.0000000  
## IA:2021-04-15-C:2020-11-14 1.228500e+01 9.9653071677 14.6046928 0.0000000  
## C:2021-04-30-C:2020-11-14 1.081000e+01 8.9761217945 12.6438782 0.0000000  
## IA:2021-04-30-C:2020-11-14 1.223750e+01 10.4036217945 14.0713782 0.0000000  
## C:2021-05-25-C:2020-11-14 1.187475e+01 10.1939728616 13.5555271 0.0000000  
## IA:2021-05-25-C:2020-11-14 1.371050e+01 12.0297228616 15.3912771 0.0000000  
## C:2020-11-25-IA:2020-11-14 1.240000e+00 -1.0796928323 3.5596928 0.9845037  
## IA:2020-11-25-IA:2020-11-14 1.035000e+00 -1.2846928323 3.3546928 0.9992501  
## C:2020-12-05-IA:2020-11-14 1.685000e+00 -0.6346928323 4.0046928 0.6311918  
## IA:2020-12-05-IA:2020-11-14 1.925000e+00 -0.3946928323 4.2446928 0.3152008  
## C:2021-01-22-IA:2020-11-14 5.770000e+00 3.4503071677 8.0896928 0.0000000  
## IA:2021-01-22-IA:2020-11-14 4.630000e+00 2.3103071677 6.9496928 0.0000000  
## C:2021-01-28-IA:2020-11-14 3.605000e+00 1.2853071677 5.9246928 0.0000020  
## IA:2021-01-28-IA:2020-11-14 2.990000e+00 0.6703071677 5.3096928 0.0004899  
## C:2021-02-05-IA:2020-11-14 5.050000e+00 2.7303071677 7.3696928 0.0000000  
## IA:2021-02-05-IA:2020-11-14 5.150000e+00 2.8303071677 7.4696928 0.0000000  
## C:2021-02-12-IA:2020-11-14 7.470000e+00 5.1503071677 9.7896928 0.0000000  
## IA:2021-02-12-IA:2020-11-14 6.775000e+00 4.4553071677 9.0946928 0.0000000  
## C:2021-02-26-IA:2020-11-14 6.300000e+00 3.9803071677 8.6196928 0.0000000  
## IA:2021-02-26-IA:2020-11-14 6.825000e+00 4.5053071677 9.1446928 0.0000000  
## C:2021-03-15-IA:2020-11-14 8.295000e+00 5.9753071677 10.6146928 0.0000000  
## IA:2021-03-15-IA:2020-11-14 7.775000e+00 5.4553071677 10.0946928 0.0000000  
## C:2021-03-30-IA:2020-11-14 9.820000e+00 7.5003071677 12.1396928 0.0000000  
## IA:2021-03-30-IA:2020-11-14 1.064000e+01 8.3203071677 12.9596928 0.0000000  
## C:2021-04-15-IA:2020-11-14 1.138500e+01 9.0653071677 13.7046928 0.0000000  
## IA:2021-04-15-IA:2020-11-14 1.294000e+01 10.6203071677 15.2596928 0.0000000  
## C:2021-04-30-IA:2020-11-14 1.146500e+01 9.6311217945 13.2988782 0.0000000  
## IA:2021-04-30-IA:2020-11-14 1.289250e+01 11.0586217945 14.7263782 0.0000000  
## C:2021-05-25-IA:2020-11-14 1.252975e+01 10.8489728616 14.2105271 0.0000000  
## IA:2021-05-25-IA:2020-11-14 1.436550e+01 12.6847228616 16.0462771 0.0000000  
## IA:2020-11-25-C:2020-11-25 -2.050000e-01 -2.5246928323 2.1146928 1.0000000  
## C:2020-12-05-C:2020-11-25 4.450000e-01 -1.8746928323 2.7646928 1.0000000  
## IA:2020-12-05-C:2020-11-25 6.850000e-01 -1.6346928323 3.0046928 0.9999999  
## C:2021-01-22-C:2020-11-25 4.530000e+00 2.2103071677 6.8496928 0.0000000  
## IA:2021-01-22-C:2020-11-25 3.390000e+00 1.0703071677 5.7096928 0.0000156  
## C:2021-01-28-C:2020-11-25 2.365000e+00 0.0453071677 4.6846928 0.0385887  
## IA:2021-01-28-C:2020-11-25 1.750000e+00 -0.5696928323 4.0696928 0.5414977  
## C:2021-02-05-C:2020-11-25 3.810000e+00 1.4903071677 6.1296928 0.0000003  
## IA:2021-02-05-C:2020-11-25 3.910000e+00 1.5903071677 6.2296928 0.0000001  
## C:2021-02-12-C:2020-11-25 6.230000e+00 3.9103071677 8.5496928 0.0000000  
## IA:2021-02-12-C:2020-11-25 5.535000e+00 3.2153071677 7.8546928 0.0000000  
## C:2021-02-26-C:2020-11-25 5.060000e+00 2.7403071677 7.3796928 0.0000000  
## IA:2021-02-26-C:2020-11-25 5.585000e+00 3.2653071677 7.9046928 0.0000000  
## C:2021-03-15-C:2020-11-25 7.055000e+00 4.7353071677 9.3746928 0.0000000  
## IA:2021-03-15-C:2020-11-25 6.535000e+00 4.2153071677 8.8546928 0.0000000  
## C:2021-03-30-C:2020-11-25 8.580000e+00 6.2603071677 10.8996928 0.0000000  
## IA:2021-03-30-C:2020-11-25 9.400000e+00 7.0803071677 11.7196928 0.0000000  
## C:2021-04-15-C:2020-11-25 1.014500e+01 7.8253071677 12.4646928 0.0000000  
## IA:2021-04-15-C:2020-11-25 1.170000e+01 9.3803071677 14.0196928 0.0000000  
## C:2021-04-30-C:2020-11-25 1.022500e+01 8.3911217945 12.0588782 0.0000000  
## IA:2021-04-30-C:2020-11-25 1.165250e+01 9.8186217945 13.4863782 0.0000000  
## C:2021-05-25-C:2020-11-25 1.128975e+01 9.6089728616 12.9705271 0.0000000  
## IA:2021-05-25-C:2020-11-25 1.312550e+01 11.4447228616 14.8062771 0.0000000  
## C:2020-12-05-IA:2020-11-25 6.500000e-01 -1.6696928323 2.9696928 1.0000000  
## IA:2020-12-05-IA:2020-11-25 8.900000e-01 -1.4296928323 3.2096928 0.9999661  
## C:2021-01-22-IA:2020-11-25 4.735000e+00 2.4153071677 7.0546928 0.0000000  
## IA:2021-01-22-IA:2020-11-25 3.595000e+00 1.2753071677 5.9146928 0.0000022  
## C:2021-01-28-IA:2020-11-25 2.570000e+00 0.2503071677 4.8896928 0.0107580  
## IA:2021-01-28-IA:2020-11-25 1.955000e+00 -0.3646928323 4.2746928 0.2820764  
## C:2021-02-05-IA:2020-11-25 4.015000e+00 1.6953071677 6.3346928 0.0000000  
## IA:2021-02-05-IA:2020-11-25 4.115000e+00 1.7953071677 6.4346928 0.0000000  
## C:2021-02-12-IA:2020-11-25 6.435000e+00 4.1153071677 8.7546928 0.0000000  
## IA:2021-02-12-IA:2020-11-25 5.740000e+00 3.4203071677 8.0596928 0.0000000  
## C:2021-02-26-IA:2020-11-25 5.265000e+00 2.9453071677 7.5846928 0.0000000  
## IA:2021-02-26-IA:2020-11-25 5.790000e+00 3.4703071677 8.1096928 0.0000000  
## C:2021-03-15-IA:2020-11-25 7.260000e+00 4.9403071677 9.5796928 0.0000000  
## IA:2021-03-15-IA:2020-11-25 6.740000e+00 4.4203071677 9.0596928 0.0000000  
## C:2021-03-30-IA:2020-11-25 8.785000e+00 6.4653071677 11.1046928 0.0000000  
## IA:2021-03-30-IA:2020-11-25 9.605000e+00 7.2853071677 11.9246928 0.0000000  
## C:2021-04-15-IA:2020-11-25 1.035000e+01 8.0303071677 12.6696928 0.0000000  
## IA:2021-04-15-IA:2020-11-25 1.190500e+01 9.5853071677 14.2246928 0.0000000  
## C:2021-04-30-IA:2020-11-25 1.043000e+01 8.5961217945 12.2638782 0.0000000  
## IA:2021-04-30-IA:2020-11-25 1.185750e+01 10.0236217945 13.6913782 0.0000000  
## C:2021-05-25-IA:2020-11-25 1.149475e+01 9.8139728616 13.1755271 0.0000000  
## IA:2021-05-25-IA:2020-11-25 1.333050e+01 11.6497228616 15.0112771 0.0000000  
## IA:2020-12-05-C:2020-12-05 2.400000e-01 -2.0796928323 2.5596928 1.0000000  
## C:2021-01-22-C:2020-12-05 4.085000e+00 1.7653071677 6.4046928 0.0000000  
## IA:2021-01-22-C:2020-12-05 2.945000e+00 0.6253071677 5.2646928 0.0007011  
## C:2021-01-28-C:2020-12-05 1.920000e+00 -0.3996928323 4.2396928 0.3209258  
## IA:2021-01-28-C:2020-12-05 1.305000e+00 -1.0146928323 3.6246928 0.9686189  
## C:2021-02-05-C:2020-12-05 3.365000e+00 1.0453071677 5.6846928 0.0000196  
## IA:2021-02-05-C:2020-12-05 3.465000e+00 1.1453071677 5.7846928 0.0000078  
## C:2021-02-12-C:2020-12-05 5.785000e+00 3.4653071677 8.1046928 0.0000000  
## IA:2021-02-12-C:2020-12-05 5.090000e+00 2.7703071677 7.4096928 0.0000000  
## C:2021-02-26-C:2020-12-05 4.615000e+00 2.2953071677 6.9346928 0.0000000  
## IA:2021-02-26-C:2020-12-05 5.140000e+00 2.8203071677 7.4596928 0.0000000  
## C:2021-03-15-C:2020-12-05 6.610000e+00 4.2903071677 8.9296928 0.0000000  
## IA:2021-03-15-C:2020-12-05 6.090000e+00 3.7703071677 8.4096928 0.0000000  
## C:2021-03-30-C:2020-12-05 8.135000e+00 5.8153071677 10.4546928 0.0000000  
## IA:2021-03-30-C:2020-12-05 8.955000e+00 6.6353071677 11.2746928 0.0000000  
## C:2021-04-15-C:2020-12-05 9.700000e+00 7.3803071677 12.0196928 0.0000000  
## IA:2021-04-15-C:2020-12-05 1.125500e+01 8.9353071677 13.5746928 0.0000000  
## C:2021-04-30-C:2020-12-05 9.780000e+00 7.9461217945 11.6138782 0.0000000  
## IA:2021-04-30-C:2020-12-05 1.120750e+01 9.3736217945 13.0413782 0.0000000  
## C:2021-05-25-C:2020-12-05 1.084475e+01 9.1639728616 12.5255271 0.0000000  
## IA:2021-05-25-C:2020-12-05 1.268050e+01 10.9997228616 14.3612771 0.0000000  
## C:2021-01-22-IA:2020-12-05 3.845000e+00 1.5253071677 6.1646928 0.0000002  
## IA:2021-01-22-IA:2020-12-05 2.705000e+00 0.3853071677 5.0246928 0.0042534  
## C:2021-01-28-IA:2020-12-05 1.680000e+00 -0.6396928323 3.9996928 0.6379895  
## IA:2021-01-28-IA:2020-12-05 1.065000e+00 -1.2546928323 3.3846928 0.9987244  
## C:2021-02-05-IA:2020-12-05 3.125000e+00 0.8053071677 5.4446928 0.0001611  
## IA:2021-02-05-IA:2020-12-05 3.225000e+00 0.9053071677 5.5446928 0.0000683  
## C:2021-02-12-IA:2020-12-05 5.545000e+00 3.2253071677 7.8646928 0.0000000  
## IA:2021-02-12-IA:2020-12-05 4.850000e+00 2.5303071677 7.1696928 0.0000000  
## C:2021-02-26-IA:2020-12-05 4.375000e+00 2.0553071677 6.6946928 0.0000000  
## IA:2021-02-26-IA:2020-12-05 4.900000e+00 2.5803071677 7.2196928 0.0000000  
## C:2021-03-15-IA:2020-12-05 6.370000e+00 4.0503071677 8.6896928 0.0000000  
## IA:2021-03-15-IA:2020-12-05 5.850000e+00 3.5303071677 8.1696928 0.0000000  
## C:2021-03-30-IA:2020-12-05 7.895000e+00 5.5753071677 10.2146928 0.0000000  
## IA:2021-03-30-IA:2020-12-05 8.715000e+00 6.3953071677 11.0346928 0.0000000  
## C:2021-04-15-IA:2020-12-05 9.460000e+00 7.1403071677 11.7796928 0.0000000  
## IA:2021-04-15-IA:2020-12-05 1.101500e+01 8.6953071677 13.3346928 0.0000000  
## C:2021-04-30-IA:2020-12-05 9.540000e+00 7.7061217945 11.3738782 0.0000000  
## IA:2021-04-30-IA:2020-12-05 1.096750e+01 9.1336217945 12.8013782 0.0000000  
## C:2021-05-25-IA:2020-12-05 1.060475e+01 8.9239728616 12.2855271 0.0000000  
## IA:2021-05-25-IA:2020-12-05 1.244050e+01 10.7597228616 14.1212771 0.0000000  
## IA:2021-01-22-C:2021-01-22 -1.140000e+00 -3.4596928323 1.1796928 0.9958159  
## C:2021-01-28-C:2021-01-22 -2.165000e+00 -4.4846928323 0.1546928 0.1129448  
## IA:2021-01-28-C:2021-01-22 -2.780000e+00 -5.0996928323 -0.4603072 0.0024711  
## C:2021-02-05-C:2021-01-22 -7.200000e-01 -3.0396928323 1.5996928 0.9999998  
## IA:2021-02-05-C:2021-01-22 -6.200000e-01 -2.9396928323 1.6996928 1.0000000  
## C:2021-02-12-C:2021-01-22 1.700000e+00 -0.6196928323 4.0196928 0.6106672  
## IA:2021-02-12-C:2021-01-22 1.005000e+00 -1.3146928323 3.3246928 0.9995741  
## C:2021-02-26-C:2021-01-22 5.300000e-01 -1.7896928323 2.8496928 1.0000000  
## IA:2021-02-26-C:2021-01-22 1.055000e+00 -1.2646928323 3.3746928 0.9989274  
## C:2021-03-15-C:2021-01-22 2.525000e+00 0.2053071677 4.8446928 0.0144419  
## IA:2021-03-15-C:2021-01-22 2.005000e+00 -0.3146928323 4.3246928 0.2317759  
## C:2021-03-30-C:2021-01-22 4.050000e+00 1.7303071677 6.3696928 0.0000000  
## IA:2021-03-30-C:2021-01-22 4.870000e+00 2.5503071677 7.1896928 0.0000000  
## C:2021-04-15-C:2021-01-22 5.615000e+00 3.2953071677 7.9346928 0.0000000  
## IA:2021-04-15-C:2021-01-22 7.170000e+00 4.8503071677 9.4896928 0.0000000  
## C:2021-04-30-C:2021-01-22 5.695000e+00 3.8611217945 7.5288782 0.0000000  
## IA:2021-04-30-C:2021-01-22 7.122500e+00 5.2886217945 8.9563782 0.0000000  
## C:2021-05-25-C:2021-01-22 6.759750e+00 5.0789728616 8.4405271 0.0000000  
## IA:2021-05-25-C:2021-01-22 8.595500e+00 6.9147228616 10.2762771 0.0000000  
## C:2021-01-28-IA:2021-01-22 -1.025000e+00 -3.3446928323 1.2946928 0.9993765  
## IA:2021-01-28-IA:2021-01-22 -1.640000e+00 -3.9596928323 0.6796928 0.6912668  
## C:2021-02-05-IA:2021-01-22 4.200000e-01 -1.8996928323 2.7396928 1.0000000  
## IA:2021-02-05-IA:2021-01-22 5.200000e-01 -1.7996928323 2.8396928 1.0000000  
## C:2021-02-12-IA:2021-01-22 2.840000e+00 0.5203071677 5.1596928 0.0015789  
## IA:2021-02-12-IA:2021-01-22 2.145000e+00 -0.1746928323 4.4646928 0.1244559  
## C:2021-02-26-IA:2021-01-22 1.670000e+00 -0.6496928323 3.9896928 0.6515060  
## IA:2021-02-26-IA:2021-01-22 2.195000e+00 -0.1246928323 4.5146928 0.0972851  
## C:2021-03-15-IA:2021-01-22 3.665000e+00 1.3453071677 5.9846928 0.0000011  
## IA:2021-03-15-IA:2021-01-22 3.145000e+00 0.8253071677 5.4646928 0.0001360  
## C:2021-03-30-IA:2021-01-22 5.190000e+00 2.8703071677 7.5096928 0.0000000  
## IA:2021-03-30-IA:2021-01-22 6.010000e+00 3.6903071677 8.3296928 0.0000000  
## C:2021-04-15-IA:2021-01-22 6.755000e+00 4.4353071677 9.0746928 0.0000000  
## IA:2021-04-15-IA:2021-01-22 8.310000e+00 5.9903071677 10.6296928 0.0000000  
## C:2021-04-30-IA:2021-01-22 6.835000e+00 5.0011217945 8.6688782 0.0000000  
## IA:2021-04-30-IA:2021-01-22 8.262500e+00 6.4286217945 10.0963782 0.0000000  
## C:2021-05-25-IA:2021-01-22 7.899750e+00 6.2189728616 9.5805271 0.0000000  
## IA:2021-05-25-IA:2021-01-22 9.735500e+00 8.0547228616 11.4162771 0.0000000  
## IA:2021-01-28-C:2021-01-28 -6.150000e-01 -2.9346928323 1.7046928 1.0000000  
## C:2021-02-05-C:2021-01-28 1.445000e+00 -0.8746928323 3.7646928 0.8962147  
## IA:2021-02-05-C:2021-01-28 1.545000e+00 -0.7746928323 3.8646928 0.8050726  
## C:2021-02-12-C:2021-01-28 3.865000e+00 1.5453071677 6.1846928 0.0000001  
## IA:2021-02-12-C:2021-01-28 3.170000e+00 0.8503071677 5.4896928 0.0001099  
## C:2021-02-26-C:2021-01-28 2.695000e+00 0.3753071677 5.0146928 0.0045661  
## IA:2021-02-26-C:2021-01-28 3.220000e+00 0.9003071677 5.5396928 0.0000713  
## C:2021-03-15-C:2021-01-28 4.690000e+00 2.3703071677 7.0096928 0.0000000  
## IA:2021-03-15-C:2021-01-28 4.170000e+00 1.8503071677 6.4896928 0.0000000  
## C:2021-03-30-C:2021-01-28 6.215000e+00 3.8953071677 8.5346928 0.0000000  
## IA:2021-03-30-C:2021-01-28 7.035000e+00 4.7153071677 9.3546928 0.0000000  
## C:2021-04-15-C:2021-01-28 7.780000e+00 5.4603071677 10.0996928 0.0000000  
## IA:2021-04-15-C:2021-01-28 9.335000e+00 7.0153071677 11.6546928 0.0000000  
## C:2021-04-30-C:2021-01-28 7.860000e+00 6.0261217945 9.6938782 0.0000000  
## IA:2021-04-30-C:2021-01-28 9.287500e+00 7.4536217945 11.1213782 0.0000000  
## C:2021-05-25-C:2021-01-28 8.924750e+00 7.2439728616 10.6055271 0.0000000  
## IA:2021-05-25-C:2021-01-28 1.076050e+01 9.0797228616 12.4412771 0.0000000  
## C:2021-02-05-IA:2021-01-28 2.060000e+00 -0.2596928323 4.3796928 0.1837924  
## IA:2021-02-05-IA:2021-01-28 2.160000e+00 -0.1596928323 4.4796928 0.1157402  
## C:2021-02-12-IA:2021-01-28 4.480000e+00 2.1603071677 6.7996928 0.0000000  
## IA:2021-02-12-IA:2021-01-28 3.785000e+00 1.4653071677 6.1046928 0.0000003  
## C:2021-02-26-IA:2021-01-28 3.310000e+00 0.9903071677 5.6296928 0.0000322  
## IA:2021-02-26-IA:2021-01-28 3.835000e+00 1.5153071677 6.1546928 0.0000002  
## C:2021-03-15-IA:2021-01-28 5.305000e+00 2.9853071677 7.6246928 0.0000000  
## IA:2021-03-15-IA:2021-01-28 4.785000e+00 2.4653071677 7.1046928 0.0000000  
## C:2021-03-30-IA:2021-01-28 6.830000e+00 4.5103071677 9.1496928 0.0000000  
## IA:2021-03-30-IA:2021-01-28 7.650000e+00 5.3303071677 9.9696928 0.0000000  
## C:2021-04-15-IA:2021-01-28 8.395000e+00 6.0753071677 10.7146928 0.0000000  
## IA:2021-04-15-IA:2021-01-28 9.950000e+00 7.6303071677 12.2696928 0.0000000  
## C:2021-04-30-IA:2021-01-28 8.475000e+00 6.6411217945 10.3088782 0.0000000  
## IA:2021-04-30-IA:2021-01-28 9.902500e+00 8.0686217945 11.7363782 0.0000000  
## C:2021-05-25-IA:2021-01-28 9.539750e+00 7.8589728616 11.2205271 0.0000000  
## IA:2021-05-25-IA:2021-01-28 1.137550e+01 9.6947228616 13.0562771 0.0000000  
## IA:2021-02-05-C:2021-02-05 1.000000e-01 -2.2196928323 2.4196928 1.0000000  
## C:2021-02-12-C:2021-02-05 2.420000e+00 0.1003071677 4.7396928 0.0278489  
## IA:2021-02-12-C:2021-02-05 1.725000e+00 -0.5946928323 4.0446928 0.5761542  
## C:2021-02-26-C:2021-02-05 1.250000e+00 -1.0696928323 3.5696928 0.9826060  
## IA:2021-02-26-C:2021-02-05 1.775000e+00 -0.5446928323 4.0946928 0.5069654  
## C:2021-03-15-C:2021-02-05 3.245000e+00 0.9253071677 5.5646928 0.0000573  
## IA:2021-03-15-C:2021-02-05 2.725000e+00 0.4053071677 5.0446928 0.0036869  
## C:2021-03-30-C:2021-02-05 4.770000e+00 2.4503071677 7.0896928 0.0000000  
## IA:2021-03-30-C:2021-02-05 5.590000e+00 3.2703071677 7.9096928 0.0000000  
## C:2021-04-15-C:2021-02-05 6.335000e+00 4.0153071677 8.6546928 0.0000000  
## IA:2021-04-15-C:2021-02-05 7.890000e+00 5.5703071677 10.2096928 0.0000000  
## C:2021-04-30-C:2021-02-05 6.415000e+00 4.5811217945 8.2488782 0.0000000  
## IA:2021-04-30-C:2021-02-05 7.842500e+00 6.0086217945 9.6763782 0.0000000  
## C:2021-05-25-C:2021-02-05 7.479750e+00 5.7989728616 9.1605271 0.0000000  
## IA:2021-05-25-C:2021-02-05 9.315500e+00 7.6347228616 10.9962771 0.0000000  
## C:2021-02-12-IA:2021-02-05 2.320000e+00 0.0003071677 4.6396928 0.0499138  
## IA:2021-02-12-IA:2021-02-05 1.625000e+00 -0.6946928323 3.9446928 0.7105982  
## C:2021-02-26-IA:2021-02-05 1.150000e+00 -1.1696928323 3.4696928 0.9951663  
## IA:2021-02-26-IA:2021-02-05 1.675000e+00 -0.6446928323 3.9946928 0.6447616  
## C:2021-03-15-IA:2021-02-05 3.145000e+00 0.8253071677 5.4646928 0.0001360  
## IA:2021-03-15-IA:2021-02-05 2.625000e+00 0.3053071677 4.9446928 0.0074298  
## C:2021-03-30-IA:2021-02-05 4.670000e+00 2.3503071677 6.9896928 0.0000000  
## IA:2021-03-30-IA:2021-02-05 5.490000e+00 3.1703071677 7.8096928 0.0000000  
## C:2021-04-15-IA:2021-02-05 6.235000e+00 3.9153071677 8.5546928 0.0000000  
## IA:2021-04-15-IA:2021-02-05 7.790000e+00 5.4703071677 10.1096928 0.0000000  
## C:2021-04-30-IA:2021-02-05 6.315000e+00 4.4811217945 8.1488782 0.0000000  
## IA:2021-04-30-IA:2021-02-05 7.742500e+00 5.9086217945 9.5763782 0.0000000  
## C:2021-05-25-IA:2021-02-05 7.379750e+00 5.6989728616 9.0605271 0.0000000  
## IA:2021-05-25-IA:2021-02-05 9.215500e+00 7.5347228616 10.8962771 0.0000000  
## IA:2021-02-12-C:2021-02-12 -6.950000e-01 -3.0146928323 1.6246928 0.9999999  
## C:2021-02-26-C:2021-02-12 -1.170000e+00 -3.4896928323 1.1496928 0.9936086  
## IA:2021-02-26-C:2021-02-12 -6.450000e-01 -2.9646928323 1.6746928 1.0000000  
## C:2021-03-15-C:2021-02-12 8.250000e-01 -1.4946928323 3.1446928 0.9999939  
## IA:2021-03-15-C:2021-02-12 3.050000e-01 -2.0146928323 2.6246928 1.0000000  
## C:2021-03-30-C:2021-02-12 2.350000e+00 0.0303071677 4.6696928 0.0420857  
## IA:2021-03-30-C:2021-02-12 3.170000e+00 0.8503071677 5.4896928 0.0001099  
## C:2021-04-15-C:2021-02-12 3.915000e+00 1.5953071677 6.2346928 0.0000001  
## IA:2021-04-15-C:2021-02-12 5.470000e+00 3.1503071677 7.7896928 0.0000000  
## C:2021-04-30-C:2021-02-12 3.995000e+00 2.1611217945 5.8288782 0.0000000  
## IA:2021-04-30-C:2021-02-12 5.422500e+00 3.5886217945 7.2563782 0.0000000  
## C:2021-05-25-C:2021-02-12 5.059750e+00 3.3789728616 6.7405271 0.0000000  
## IA:2021-05-25-C:2021-02-12 6.895500e+00 5.2147228616 8.5762771 0.0000000  
## C:2021-02-26-IA:2021-02-12 -4.750000e-01 -2.7946928323 1.8446928 1.0000000  
## IA:2021-02-26-IA:2021-02-12 5.000000e-02 -2.2696928323 2.3696928 1.0000000  
## C:2021-03-15-IA:2021-02-12 1.520000e+00 -0.7996928323 3.8396928 0.8309403  
## IA:2021-03-15-IA:2021-02-12 1.000000e+00 -1.3196928323 3.3196928 0.9996138  
## C:2021-03-30-IA:2021-02-12 3.045000e+00 0.7253071677 5.3646928 0.0003134  
## IA:2021-03-30-IA:2021-02-12 3.865000e+00 1.5453071677 6.1846928 0.0000001  
## C:2021-04-15-IA:2021-02-12 4.610000e+00 2.2903071677 6.9296928 0.0000000  
## IA:2021-04-15-IA:2021-02-12 6.165000e+00 3.8453071677 8.4846928 0.0000000  
## C:2021-04-30-IA:2021-02-12 4.690000e+00 2.8561217945 6.5238782 0.0000000  
## IA:2021-04-30-IA:2021-02-12 6.117500e+00 4.2836217945 7.9513782 0.0000000  
## C:2021-05-25-IA:2021-02-12 5.754750e+00 4.0739728616 7.4355271 0.0000000  
## IA:2021-05-25-IA:2021-02-12 7.590500e+00 5.9097228616 9.2712771 0.0000000  
## IA:2021-02-26-C:2021-02-26 5.250000e-01 -1.7946928323 2.8446928 1.0000000  
## C:2021-03-15-C:2021-02-26 1.995000e+00 -0.3246928323 4.3146928 0.2413313  
## IA:2021-03-15-C:2021-02-26 1.475000e+00 -0.8446928323 3.7946928 0.8723941  
## C:2021-03-30-C:2021-02-26 3.520000e+00 1.2003071677 5.8396928 0.0000046  
## IA:2021-03-30-C:2021-02-26 4.340000e+00 2.0203071677 6.6596928 0.0000000  
## C:2021-04-15-C:2021-02-26 5.085000e+00 2.7653071677 7.4046928 0.0000000  
## IA:2021-04-15-C:2021-02-26 6.640000e+00 4.3203071677 8.9596928 0.0000000  
## C:2021-04-30-C:2021-02-26 5.165000e+00 3.3311217945 6.9988782 0.0000000  
## IA:2021-04-30-C:2021-02-26 6.592500e+00 4.7586217945 8.4263782 0.0000000  
## C:2021-05-25-C:2021-02-26 6.229750e+00 4.5489728616 7.9105271 0.0000000  
## IA:2021-05-25-C:2021-02-26 8.065500e+00 6.3847228616 9.7462771 0.0000000  
## C:2021-03-15-IA:2021-02-26 1.470000e+00 -0.8496928323 3.7896928 0.8765786  
## IA:2021-03-15-IA:2021-02-26 9.500000e-01 -1.3696928323 3.2696928 0.9998631  
## C:2021-03-30-IA:2021-02-26 2.995000e+00 0.6753071677 5.3146928 0.0004706  
## IA:2021-03-30-IA:2021-02-26 3.815000e+00 1.4953071677 6.1346928 0.0000002  
## C:2021-04-15-IA:2021-02-26 4.560000e+00 2.2403071677 6.8796928 0.0000000  
## IA:2021-04-15-IA:2021-02-26 6.115000e+00 3.7953071677 8.4346928 0.0000000  
## C:2021-04-30-IA:2021-02-26 4.640000e+00 2.8061217945 6.4738782 0.0000000  
## IA:2021-04-30-IA:2021-02-26 6.067500e+00 4.2336217945 7.9013782 0.0000000  
## C:2021-05-25-IA:2021-02-26 5.704750e+00 4.0239728616 7.3855271 0.0000000  
## IA:2021-05-25-IA:2021-02-26 7.540500e+00 5.8597228616 9.2212771 0.0000000  
## IA:2021-03-15-C:2021-03-15 -5.200000e-01 -2.8396928323 1.7996928 1.0000000  
## C:2021-03-30-C:2021-03-15 1.525000e+00 -0.7946928323 3.8446928 0.8259233  
## IA:2021-03-30-C:2021-03-15 2.345000e+00 0.0253071677 4.6646928 0.0433111  
## C:2021-04-15-C:2021-03-15 3.090000e+00 0.7703071677 5.4096928 0.0002161  
## IA:2021-04-15-C:2021-03-15 4.645000e+00 2.3253071677 6.9646928 0.0000000  
## C:2021-04-30-C:2021-03-15 3.170000e+00 1.3361217945 5.0038782 0.0000000  
## IA:2021-04-30-C:2021-03-15 4.597500e+00 2.7636217945 6.4313782 0.0000000  
## C:2021-05-25-C:2021-03-15 4.234750e+00 2.5539728616 5.9155271 0.0000000  
## IA:2021-05-25-C:2021-03-15 6.070500e+00 4.3897228616 7.7512771 0.0000000  
## C:2021-03-30-IA:2021-03-15 2.045000e+00 -0.2746928323 4.3646928 0.1961127  
## IA:2021-03-30-IA:2021-03-15 2.865000e+00 0.5453071677 5.1846928 0.0013055  
## C:2021-04-15-IA:2021-03-15 3.610000e+00 1.2903071677 5.9296928 0.0000019  
## IA:2021-04-15-IA:2021-03-15 5.165000e+00 2.8453071677 7.4846928 0.0000000  
## C:2021-04-30-IA:2021-03-15 3.690000e+00 1.8561217945 5.5238782 0.0000000  
## IA:2021-04-30-IA:2021-03-15 5.117500e+00 3.2836217945 6.9513782 0.0000000  
## C:2021-05-25-IA:2021-03-15 4.754750e+00 3.0739728616 6.4355271 0.0000000  
## IA:2021-05-25-IA:2021-03-15 6.590500e+00 4.9097228616 8.2712771 0.0000000  
## IA:2021-03-30-C:2021-03-30 8.200000e-01 -1.4996928323 3.1396928 0.9999947  
## C:2021-04-15-C:2021-03-30 1.565000e+00 -0.7546928323 3.8846928 0.7830230  
## IA:2021-04-15-C:2021-03-30 3.120000e+00 0.8003071677 5.4396928 0.0001680  
## C:2021-04-30-C:2021-03-30 1.645000e+00 -0.1888782055 3.4788782 0.1676633  
## IA:2021-04-30-C:2021-03-30 3.072500e+00 1.2386217945 4.9063782 0.0000001  
## C:2021-05-25-C:2021-03-30 2.709750e+00 1.0289728616 4.3905271 0.0000005  
## IA:2021-05-25-C:2021-03-30 4.545500e+00 2.8647228616 6.2262771 0.0000000  
## C:2021-04-15-IA:2021-03-30 7.450000e-01 -1.5746928323 3.0646928 0.9999995  
## IA:2021-04-15-IA:2021-03-30 2.300000e+00 -0.0196928323 4.6196928 0.0558036  
## C:2021-04-30-IA:2021-03-30 8.250000e-01 -1.0088782055 2.6588782 0.9991244  
## IA:2021-04-30-IA:2021-03-30 2.252500e+00 0.4186217945 4.0863782 0.0014724  
## C:2021-05-25-IA:2021-03-30 1.889750e+00 0.2089728616 3.5705271 0.0083344  
## IA:2021-05-25-IA:2021-03-30 3.725500e+00 2.0447228616 5.4062771 0.0000000  
## IA:2021-04-15-C:2021-04-15 1.555000e+00 -0.7646928323 3.8746928 0.7941927  
## C:2021-04-30-C:2021-04-15 8.000000e-02 -1.7538782055 1.9138782 1.0000000  
## IA:2021-04-30-C:2021-04-15 1.507500e+00 -0.3263782055 3.3413782 0.3362456  
## C:2021-05-25-C:2021-04-15 1.144750e+00 -0.5360271384 2.8255271 0.7658606  
## IA:2021-05-25-C:2021-04-15 2.980500e+00 1.2997228616 4.6612771 0.0000000  
## C:2021-04-30-IA:2021-04-15 -1.475000e+00 -3.3088782055 0.3588782 0.3864839  
## IA:2021-04-30-IA:2021-04-15 -4.750000e-02 -1.8813782055 1.7863782 1.0000000  
## C:2021-05-25-IA:2021-04-15 -4.102500e-01 -2.0910271384 1.2705271 1.0000000  
## IA:2021-05-25-IA:2021-04-15 1.425500e+00 -0.2552771384 3.1062771 0.2690426  
## IA:2021-04-30-C:2021-04-30 1.427500e+00 0.2676535838 2.5873464 0.0014090  
## C:2021-05-25-C:2021-04-30 1.064750e+00 0.1663368292 1.9631632 0.0030962  
## IA:2021-05-25-C:2021-04-30 2.900500e+00 2.0020868292 3.7989132 0.0000000  
## C:2021-05-25-IA:2021-04-30 -3.627500e-01 -1.2611631708 0.5356632 0.9998982  
## IA:2021-05-25-IA:2021-04-30 1.473000e+00 0.5745868292 2.3714132 0.0000003  
## IA:2021-05-25-C:2021-05-25 1.835750e+00 1.3170509140 2.3544491 0.0000000

Efecto de la IA sobre el factor de condición

t2way(K ~ Condición + Fechas + Condición:Fechas, data = a,)

## Call:  
## t2way(formula = K ~ Condición + Fechas + Condición:Fechas,   
## data = a)  
##   
## value p.value  
## Condición 15.4532 0.001  
## Fechas 954.4315 0.001  
## Condición:Fechas 242.1393 0.001

anovak <- aov(K ~ Condición + Fechas + Condición:Fechas, data = a)  
anova(anovak)

## Analysis of Variance Table  
##   
## Response: K  
## Df Sum Sq Mean Sq F value Pr(>F)   
## Condición 1 3.0086 3.00856 266.582 < 2.2e-16 \*\*\*  
## Fechas 16 7.4582 0.46614 41.303 < 2.2e-16 \*\*\*  
## Condición:Fechas 16 1.9569 0.12230 10.837 < 2.2e-16 \*\*\*  
## Residuals 1526 17.2220 0.01129   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

TukeyHSD(anovak)

## Tukey multiple comparisons of means  
## 95% family-wise confidence level  
##   
## Fit: aov(formula = K ~ Condición + Fechas + Condición:Fechas, data = a)  
##   
## $Condición  
## diff lwr upr p adj  
## IA-C 0.08783091 0.07727916 0.09838266 0  
##   
## $Fechas  
## diff lwr upr p adj  
## 2020-10-14-2020-10-05 0.040223385 -0.042071352 0.122518121 0.9593812  
## 2020-10-26-2020-10-05 0.138250543 0.055955806 0.220545279 0.0000010  
## 2020-11-05-2020-10-05 0.149346753 0.067052016 0.231641489 0.0000001  
## 2020-11-14-2020-10-05 0.211813898 0.129519161 0.294108634 0.0000000  
## 2020-11-25-2020-10-05 0.226358654 0.144063917 0.308653390 0.0000000  
## 2020-12-05-2020-10-05 0.187194934 0.104900197 0.269489670 0.0000000  
## 2021-01-22-2020-10-05 0.086059892 0.003765155 0.168354628 0.0296365  
## 2021-01-28-2020-10-05 0.241009367 0.158714631 0.323304104 0.0000000  
## 2021-02-05-2020-10-05 0.252935486 0.170640750 0.335230223 0.0000000  
## 2021-02-12-2020-10-05 0.062572992 -0.019721745 0.144867728 0.4023876  
## 2021-02-26-2020-10-05 0.038142328 -0.044152408 0.120437065 0.9750730  
## 2021-03-15-2020-10-05 -0.033227227 -0.115521964 0.049067509 0.9938796  
## 2021-03-30-2020-10-05 -0.073080705 -0.155375441 0.009214032 0.1531680  
## 2021-04-15-2020-10-05 0.065317558 -0.016977179 0.147612294 0.3235977  
## 2021-04-30-2020-10-05 0.133669192 0.068609491 0.198728894 0.0000000  
## 2021-05-25-2020-10-05 0.170614541 0.110986339 0.230242742 0.0000000  
## 2020-10-26-2020-10-14 0.098027158 0.015732421 0.180321894 0.0044868  
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## IA:2020-11-25-C:2020-11-25 -0.0071477092 -0.135388026 0.1210926075 1.0000000  
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## IA:2021-02-26-C:2021-02-05 -0.2196005047 -0.347840821 -0.0913601881 0.0000000  
## C:2021-03-15-C:2021-02-05 -0.3307326964 -0.458973013 -0.2024923798 0.0000000  
## IA:2021-03-15-C:2021-02-05 -0.2247323140 -0.352972631 -0.0964919973 0.0000000  
## C:2021-03-30-C:2021-02-05 -0.3445397951 -0.472780112 -0.2162994785 0.0000000  
## IA:2021-03-30-C:2021-02-05 -0.2906321700 -0.418872487 -0.1623918533 0.0000000  
## C:2021-04-15-C:2021-02-05 -0.2054604929 -0.333700810 -0.0772201763 0.0000007  
## IA:2021-04-15-C:2021-02-05 -0.1529149472 -0.281155264 -0.0246746306 0.0027382  
## C:2021-04-30-C:2021-02-05 -0.1583216951 -0.259704567 -0.0569388229 0.0000017  
## IA:2021-04-30-C:2021-02-05 -0.0633504759 -0.164733348 0.0380323963 0.8928448  
## C:2021-05-25-C:2021-02-05 -0.1474749911 -0.240393928 -0.0545560540 0.0000010  
## IA:2021-05-25-C:2021-02-05 -0.0003064827 -0.093225420 0.0926124544 1.0000000  
## C:2021-02-12-IA:2021-02-05 -0.1546573098 -0.282897626 -0.0264169932 0.0021705  
## IA:2021-02-12-IA:2021-02-05 -0.2429280975 -0.371168414 -0.1146877809 0.0000000  
## C:2021-02-26-IA:2021-02-05 -0.2099858118 -0.338226128 -0.0817454951 0.0000003  
## IA:2021-02-26-IA:2021-02-05 -0.2364609223 -0.364701239 -0.1082206056 0.0000000  
## C:2021-03-15-IA:2021-02-05 -0.3475931140 -0.475833431 -0.2193527973 0.0000000  
## IA:2021-03-15-IA:2021-02-05 -0.2415927315 -0.369833048 -0.1133524148 0.0000000  
## C:2021-03-30-IA:2021-02-05 -0.3614002126 -0.489640529 -0.2331598960 0.0000000  
## IA:2021-03-30-IA:2021-02-05 -0.3074925875 -0.435732904 -0.1792522709 0.0000000  
## C:2021-04-15-IA:2021-02-05 -0.2223209105 -0.350561227 -0.0940805938 0.0000000  
## IA:2021-04-15-IA:2021-02-05 -0.1697753648 -0.298015681 -0.0415350481 0.0002530  
## C:2021-04-30-IA:2021-02-05 -0.1751821126 -0.276564985 -0.0737992405 0.0000000  
## IA:2021-04-30-IA:2021-02-05 -0.0802108934 -0.181593766 0.0211719787 0.4257307  
## C:2021-05-25-IA:2021-02-05 -0.1643354087 -0.257254346 -0.0714164715 0.0000000  
## IA:2021-05-25-IA:2021-02-05 -0.0171669003 -0.110085837 0.0757520369 1.0000000  
## IA:2021-02-12-C:2021-02-12 -0.0882707877 -0.216511104 0.0399695289 0.7458329  
## C:2021-02-26-C:2021-02-12 -0.0553285020 -0.183568819 0.0729118147 0.9996076  
## IA:2021-02-26-C:2021-02-12 -0.0818036125 -0.210043929 0.0464367042 0.8683689  
## C:2021-03-15-C:2021-02-12 -0.1929358042 -0.321176121 -0.0646954875 0.0000061  
## IA:2021-03-15-C:2021-02-12 -0.0869354217 -0.215175738 0.0413048950 0.7744121  
## C:2021-03-30-C:2021-02-12 -0.2067429028 -0.334983219 -0.0785025862 0.0000005  
## IA:2021-03-30-C:2021-02-12 -0.1528352777 -0.281075594 -0.0245949611 0.0027673  
## C:2021-04-15-C:2021-02-12 -0.0676636007 -0.195903917 0.0605767160 0.9871988  
## IA:2021-04-15-C:2021-02-12 -0.0151180550 -0.143358372 0.1131222617 1.0000000  
## C:2021-04-30-C:2021-02-12 -0.0205248028 -0.121907675 0.0808580693 1.0000000  
## IA:2021-04-30-C:2021-02-12 0.0744464164 -0.026936456 0.1758292885 0.6060294  
## C:2021-05-25-C:2021-02-12 -0.0096780989 -0.102597036 0.0832408383 1.0000000  
## IA:2021-05-25-C:2021-02-12 0.1374904095 0.044571472 0.2304093467 0.0000105  
## C:2021-02-26-IA:2021-02-12 0.0329422857 -0.095298031 0.1611826024 1.0000000  
## IA:2021-02-26-IA:2021-02-12 0.0064671752 -0.121773141 0.1347074919 1.0000000  
## C:2021-03-15-IA:2021-02-12 -0.1046650164 -0.232905333 0.0235753002 0.3524945  
## IA:2021-03-15-IA:2021-02-12 0.0013353660 -0.126904951 0.1295756827 1.0000000  
## C:2021-03-30-IA:2021-02-12 -0.1184721151 -0.246712432 0.0097682015 0.1256564  
## IA:2021-03-30-IA:2021-02-12 -0.0645644900 -0.192804807 0.0636758267 0.9937911  
## C:2021-04-15-IA:2021-02-12 0.0206071870 -0.107633130 0.1488475037 1.0000000  
## IA:2021-04-15-IA:2021-02-12 0.0731527327 -0.055087584 0.2013930494 0.9624473  
## C:2021-04-30-IA:2021-02-12 0.0677459849 -0.033636887 0.1691288570 0.7996006  
## IA:2021-04-30-IA:2021-02-12 0.1627172041 0.061334332 0.2641000762 0.0000006  
## C:2021-05-25-IA:2021-02-12 0.0785926889 -0.014326248 0.1715116260 0.2746140  
## IA:2021-05-25-IA:2021-02-12 0.2257611973 0.132842260 0.3186801344 0.0000000  
## IA:2021-02-26-C:2021-02-26 -0.0264751105 -0.154715427 0.1017652062 1.0000000  
## C:2021-03-15-C:2021-02-26 -0.1376073022 -0.265847619 -0.0093669855 0.0181623  
## IA:2021-03-15-C:2021-02-26 -0.0316069197 -0.159847236 0.0966333969 1.0000000  
## C:2021-03-30-C:2021-02-26 -0.1514144009 -0.279654718 -0.0231740842 0.0033360  
## IA:2021-03-30-C:2021-02-26 -0.0975067757 -0.225747092 0.0307335409 0.5224524  
## C:2021-04-15-C:2021-02-26 -0.0123350987 -0.140575415 0.1159052180 1.0000000  
## IA:2021-04-15-C:2021-02-26 0.0402104470 -0.088029870 0.1684507637 0.9999997  
## C:2021-04-30-C:2021-02-26 0.0348036992 -0.066579173 0.1361865713 0.9999974  
## IA:2021-04-30-C:2021-02-26 0.1297749184 0.028392046 0.2311577905 0.0005781  
## C:2021-05-25-C:2021-02-26 0.0456504031 -0.047268534 0.1385693403 0.9958373  
## IA:2021-05-25-C:2021-02-26 0.1928189115 0.099899974 0.2857378487 0.0000000  
## C:2021-03-15-IA:2021-02-26 -0.1111321917 -0.239372508 0.0171081250 0.2268799  
## IA:2021-03-15-IA:2021-02-26 -0.0051318092 -0.133372126 0.1231085074 1.0000000  
## C:2021-03-30-IA:2021-02-26 -0.1249392904 -0.253179607 0.0033010263 0.0693841  
## IA:2021-03-30-IA:2021-02-26 -0.0710316652 -0.199271982 0.0572086514 0.9744957  
## C:2021-04-15-IA:2021-02-26 0.0141400118 -0.114100305 0.1423803284 1.0000000  
## IA:2021-04-15-IA:2021-02-26 0.0666855575 -0.061554759 0.1949258741 0.9897130  
## C:2021-04-30-IA:2021-02-26 0.0612788097 -0.040104062 0.1626616818 0.9249487  
## IA:2021-04-30-IA:2021-02-26 0.1562500289 0.054867157 0.2576329010 0.0000027  
## C:2021-05-25-IA:2021-02-26 0.0721255136 -0.020793424 0.1650444507 0.4720107  
## IA:2021-05-25-IA:2021-02-26 0.2192940220 0.126375085 0.3122129591 0.0000000  
## IA:2021-03-15-C:2021-03-15 0.1060003825 -0.022239934 0.2342406991 0.3239220  
## C:2021-03-30-C:2021-03-15 -0.0138070987 -0.142047415 0.1144332180 1.0000000  
## IA:2021-03-30-C:2021-03-15 0.0401005264 -0.088139790 0.1683408431 0.9999997  
## C:2021-04-15-C:2021-03-15 0.1252722035 -0.002968113 0.2535125201 0.0671779  
## IA:2021-04-15-C:2021-03-15 0.1778177492 0.049577433 0.3060580658 0.0000736  
## C:2021-04-30-C:2021-03-15 0.1724110014 0.071028129 0.2737938735 0.0000001  
## IA:2021-04-30-C:2021-03-15 0.2673822206 0.165999348 0.3687650927 0.0000000  
## C:2021-05-25-C:2021-03-15 0.1832577053 0.090338768 0.2761766424 0.0000000  
## IA:2021-05-25-C:2021-03-15 0.3304262137 0.237507277 0.4233451508 0.0000000  
## C:2021-03-30-IA:2021-03-15 -0.1198074811 -0.248047798 0.0084328355 0.1117571  
## IA:2021-03-30-IA:2021-03-15 -0.0658998560 -0.194140173 0.0623404606 0.9914251  
## C:2021-04-15-IA:2021-03-15 0.0192718210 -0.108968496 0.1475121377 1.0000000  
## IA:2021-04-15-IA:2021-03-15 0.0718173667 -0.056422950 0.2000576834 0.9704458  
## C:2021-04-30-IA:2021-03-15 0.0664106189 -0.034972253 0.1677934910 0.8314281  
## IA:2021-04-30-IA:2021-03-15 0.1613818381 0.059998966 0.2627647102 0.0000009  
## C:2021-05-25-IA:2021-03-15 0.0772573228 -0.015661614 0.1701762600 0.3109950  
## IA:2021-05-25-IA:2021-03-15 0.2244258312 0.131506894 0.3173447684 0.0000000  
## IA:2021-03-30-C:2021-03-30 0.0539076251 -0.074332692 0.1821479418 0.9997664  
## C:2021-04-15-C:2021-03-30 0.1390793022 0.010838986 0.2673196188 0.0153280  
## IA:2021-04-15-C:2021-03-30 0.1916248479 0.063384531 0.3198651645 0.0000077  
## C:2021-04-30-C:2021-03-30 0.1862181000 0.084835228 0.2876009722 0.0000000  
## IA:2021-04-30-C:2021-03-30 0.2811893192 0.179806447 0.3825721914 0.0000000  
## C:2021-05-25-C:2021-03-30 0.1970648040 0.104145867 0.2899837411 0.0000000  
## IA:2021-05-25-C:2021-03-30 0.3442333124 0.251314375 0.4371522495 0.0000000  
## C:2021-04-15-IA:2021-03-30 0.0851716770 -0.043068640 0.2134119937 0.8097232  
## IA:2021-04-15-IA:2021-03-30 0.1377172227 0.009476906 0.2659575394 0.0179354  
## C:2021-04-30-IA:2021-03-30 0.1323104749 0.030927603 0.2336933470 0.0003621  
## IA:2021-04-30-IA:2021-03-30 0.2272816941 0.125898822 0.3286645662 0.0000000  
## C:2021-05-25-IA:2021-03-30 0.1431571788 0.050238242 0.2360761160 0.0000028  
## IA:2021-05-25-IA:2021-03-30 0.2903256872 0.197406750 0.3832446244 0.0000000  
## IA:2021-04-15-C:2021-04-15 0.0525455457 -0.075694771 0.1807858623 0.9998616  
## C:2021-04-30-C:2021-04-15 0.0471387979 -0.054244074 0.1485216700 0.9983959  
## IA:2021-04-30-C:2021-04-15 0.1421100171 0.040727145 0.2434928892 0.0000541  
## C:2021-05-25-C:2021-04-15 0.0579855018 -0.034933435 0.1509044389 0.8942799  
## IA:2021-05-25-C:2021-04-15 0.2051540102 0.112235073 0.2980729473 0.0000000  
## C:2021-04-30-IA:2021-04-15 -0.0054067478 -0.106789620 0.0959761243 1.0000000  
## IA:2021-04-30-IA:2021-04-15 0.0895644714 -0.011818401 0.1909473435 0.1925376  
## C:2021-05-25-IA:2021-04-15 0.0054399561 -0.087478981 0.0983588932 1.0000000  
## IA:2021-05-25-IA:2021-04-15 0.1526084645 0.059689527 0.2455274016 0.0000003  
## IA:2021-04-30-C:2021-04-30 0.0949712192 0.030851061 0.1590913775 0.0000102  
## C:2021-05-25-C:2021-04-30 0.0108467039 -0.038820557 0.0605139650 1.0000000  
## IA:2021-05-25-C:2021-04-30 0.1580152123 0.108347951 0.2076824734 0.0000000  
## C:2021-05-25-IA:2021-04-30 -0.0841245153 -0.133791776 -0.0344572542 0.0000001  
## IA:2021-05-25-IA:2021-04-30 0.0630439931 0.013376732 0.1127112542 0.0007042  
## IA:2021-05-25-C:2021-05-25 0.1471685084 0.118493102 0.1758439149 0.0000000

Efecto de la IA sobre la actividad enzimática de NKA

t2way(NKA ~ Condición + Fechas + Condición:Fechas, data = a2,)

## Call:  
## t2way(formula = NKA ~ Condición + Fechas + Condición:Fechas,   
## data = a2)  
##   
## value p.value  
## Condición 9.9093 0.002  
## Fechas 1782.4525 0.001  
## Condición:Fechas 99.2833 0.001

anovanka <- aov(NKA ~ Condición + Fechas + Condición:Fechas, data = a2)  
anova(anovanka)

## Analysis of Variance Table  
##   
## Response: NKA  
## Df Sum Sq Mean Sq F value Pr(>F)   
## Condición 1 6.32 6.321 10.7712 0.001094 \*\*   
## Fechas 14 1444.39 103.170 175.8188 < 2.2e-16 \*\*\*  
## Condición:Fechas 14 50.74 3.625 6.1769 1.59e-11 \*\*\*  
## Residuals 570 334.48 0.587   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

TukeyHSD(anovanka)

## Tukey multiple comparisons of means  
## 95% family-wise confidence level  
##   
## Fit: aov(formula = NKA ~ Condición + Fechas + Condición:Fechas, data = a2)  
##   
## $Condición  
## diff lwr upr p adj  
## IA-C -0.2052724 -0.3281211 -0.08242368 0.001094  
##   
## $Fechas  
## diff lwr upr p adj  
## 2020-10-14-2020-10-05 -0.18510434 -0.76857309 0.39836440 0.9991051  
## 2020-10-26-2020-10-05 0.37840028 -0.20506847 0.96186902 0.6581874  
## 2020-11-05-2020-10-05 -0.41726752 -1.00073627 0.16620123 0.4889506  
## 2020-11-14-2020-10-05 0.42446506 -0.15900368 1.00793381 0.4580026  
## 2020-11-25-2020-10-05 0.62649390 0.04302515 1.20996265 0.0219470  
## 2020-12-05-2020-10-05 0.73004048 0.14657174 1.31350923 0.0021919  
## 2021-01-22-2020-10-05 -0.05252919 -0.63599794 0.53093956 1.0000000  
## 2021-01-28-2020-10-05 0.28475765 -0.29871110 0.86822640 0.9433391  
## 2021-02-05-2020-10-05 0.67936813 0.09589938 1.26283688 0.0071421  
## 2021-02-12-2020-10-05 1.51308618 0.92961744 2.09655493 0.0000000  
## 2021-02-26-2020-10-05 1.61552798 1.03205923 2.19899673 0.0000000  
## 2021-03-15-2020-10-05 2.14329433 1.55982558 2.72676307 0.0000000  
## 2021-03-30-2020-10-05 4.35367878 3.77021004 4.93714753 0.0000000  
## 2021-04-15-2020-10-05 5.01813205 4.43466330 5.60160080 0.0000000  
## 2020-10-26-2020-10-14 0.56350462 -0.01996413 1.14697337 0.0711338  
## 2020-11-05-2020-10-14 -0.23216318 -0.81563192 0.35130557 0.9905615  
## 2020-11-14-2020-10-14 0.60956941 0.02610066 1.19303815 0.0306486  
## 2020-11-25-2020-10-14 0.81159824 0.22812950 1.39506699 0.0002687  
## 2020-12-05-2020-10-14 0.91514483 0.33167608 1.49861357 0.0000136  
## 2021-01-22-2020-10-14 0.13257515 -0.45089359 0.71604390 0.9999827  
## 2021-01-28-2020-10-14 0.46986199 -0.11360675 1.05333074 0.2817347  
## 2021-02-05-2020-10-14 0.86447247 0.28100373 1.44794122 0.0000611  
## 2021-02-12-2020-10-14 1.69819053 1.11472178 2.28165927 0.0000000  
## 2021-02-26-2020-10-14 1.80063233 1.21716358 2.38410107 0.0000000  
## 2021-03-15-2020-10-14 2.32839867 1.74492992 2.91186742 0.0000000  
## 2021-03-30-2020-10-14 4.53878313 3.95531438 5.12225187 0.0000000  
## 2021-04-15-2020-10-14 5.20323639 4.61976765 5.78670514 0.0000000  
## 2020-11-05-2020-10-26 -0.79566780 -1.37913654 -0.21219905 0.0004123  
## 2020-11-14-2020-10-26 0.04606479 -0.53740396 0.62953353 1.0000000  
## 2020-11-25-2020-10-26 0.24809362 -0.33537512 0.83156237 0.9824229  
## 2020-12-05-2020-10-26 0.35164021 -0.23182854 0.93510895 0.7653364  
## 2021-01-22-2020-10-26 -0.43092947 -1.01439821 0.15253928 0.4306948  
## 2021-01-28-2020-10-26 -0.09364263 -0.67711138 0.48982612 0.9999998  
## 2021-02-05-2020-10-26 0.30096785 -0.28250089 0.88443660 0.9138409  
## 2021-02-12-2020-10-26 1.13468590 0.55121716 1.71815465 0.0000000  
## 2021-02-26-2020-10-26 1.23712770 0.65365896 1.82059645 0.0000000  
## 2021-03-15-2020-10-26 1.76489405 1.18142530 2.34836280 0.0000000  
## 2021-03-30-2020-10-26 3.97527850 3.39180976 4.55874725 0.0000000  
## 2021-04-15-2020-10-26 4.63973177 4.05626303 5.22320052 0.0000000  
## 2020-11-14-2020-11-05 0.84173258 0.25826384 1.42520133 0.0001168  
## 2020-11-25-2020-11-05 1.04376142 0.46029267 1.62723017 0.0000002  
## 2020-12-05-2020-11-05 1.14730800 0.56383926 1.73077675 0.0000000  
## 2021-01-22-2020-11-05 0.36473833 -0.21873042 0.94820708 0.7146744  
## 2021-01-28-2020-11-05 0.70202517 0.11855642 1.28549392 0.0042634  
## 2021-02-05-2020-11-05 1.09663565 0.51316690 1.68010440 0.0000000  
## 2021-02-12-2020-11-05 1.93035370 1.34688496 2.51382245 0.0000000  
## 2021-02-26-2020-11-05 2.03279550 1.44932675 2.61626425 0.0000000  
## 2021-03-15-2020-11-05 2.56056185 1.97709310 3.14403059 0.0000000  
## 2021-03-30-2020-11-05 4.77094630 4.18747756 5.35441505 0.0000000  
## 2021-04-15-2020-11-05 5.43539957 4.85193082 6.01886832 0.0000000  
## 2020-11-25-2020-11-14 0.20202884 -0.38143991 0.78549758 0.9976896  
## 2020-12-05-2020-11-14 0.30557542 -0.27789333 0.88904417 0.9038707  
## 2021-01-22-2020-11-14 -0.47699425 -1.06046300 0.10647449 0.2580999  
## 2021-01-28-2020-11-14 -0.13970741 -0.72317616 0.44376133 0.9999670  
## 2021-02-05-2020-11-14 0.25490307 -0.32856568 0.83837181 0.9775803  
## 2021-02-12-2020-11-14 1.08862112 0.50515237 1.67208987 0.0000000  
## 2021-02-26-2020-11-14 1.19106292 0.60759417 1.77453167 0.0000000  
## 2021-03-15-2020-11-14 1.71882926 1.13536052 2.30229801 0.0000000  
## 2021-03-30-2020-11-14 3.92921372 3.34574497 4.51268247 0.0000000  
## 2021-04-15-2020-11-14 4.59366699 4.01019824 5.17713573 0.0000000  
## 2020-12-05-2020-11-25 0.10354658 -0.47992216 0.68701533 0.9999993  
## 2021-01-22-2020-11-25 -0.67902309 -1.26249184 -0.09555434 0.0071973  
## 2021-01-28-2020-11-25 -0.34173625 -0.92520500 0.24173250 0.8007434  
## 2021-02-05-2020-11-25 0.05287423 -0.53059452 0.63634298 1.0000000  
## 2021-02-12-2020-11-25 0.88659228 0.30312354 1.47006103 0.0000320  
## 2021-02-26-2020-11-25 0.98903408 0.40556534 1.57250283 0.0000013  
## 2021-03-15-2020-11-25 1.51680043 0.93333168 2.10026917 0.0000000  
## 2021-03-30-2020-11-25 3.72718488 3.14371614 4.31065363 0.0000000  
## 2021-04-15-2020-11-25 4.39163815 3.80816940 4.97510690 0.0000000  
## 2021-01-22-2020-12-05 -0.78256967 -1.36603842 -0.19910092 0.0005825  
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## 2021-03-30-2021-03-15 2.21038446 1.62691571 2.79385320 0.0000000  
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## diff lwr upr p adj  
## IA:2020-10-05-C:2020-10-05 -1.208684157 -2.121504e+00 -0.29586472 0.0003220  
## C:2020-10-14-C:2020-10-05 -0.800843718 -1.713663e+00 0.11197572 0.1953101  
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## IA:2020-10-26-C:2020-10-05 -0.247977916 -1.160797e+00 0.66484152 0.9999999  
## C:2020-11-05-C:2020-10-05 -1.330861410 -2.243681e+00 -0.41804197 0.0000248  
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## C:2020-11-25-C:2020-10-05 0.431004785 -4.818147e-01 1.34382422 0.9958112  
## IA:2020-11-25-C:2020-10-05 -0.386701143 -1.299521e+00 0.52611829 0.9993055  
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## IA:2020-12-05-C:2020-10-05 -0.565307279 -1.478127e+00 0.34751216 0.8767685  
## C:2021-01-22-C:2020-10-05 -0.521690615 -1.434510e+00 0.39112882 0.9459295  
## IA:2021-01-22-C:2020-10-05 -0.792051920 -1.704871e+00 0.12076752 0.2139134  
## C:2021-01-28-C:2020-10-05 -0.397806488 -1.310626e+00 0.51501295 0.9988651  
## IA:2021-01-28-C:2020-10-05 -0.241362371 -1.154182e+00 0.67145707 1.0000000  
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## C:2021-02-26-C:2020-10-05 1.140069840 2.272504e-01 2.05288928 0.0012136  
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## C:2021-03-30-C:2020-10-05 3.973703648 3.060884e+00 4.88652309 0.0000000  
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## C:2020-11-05-IA:2020-10-05 -0.122177253 -1.034997e+00 0.79064218 1.0000000  
## IA:2020-11-05-IA:2020-10-05 0.496326370 -4.164931e-01 1.40914581 0.9699702  
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## C:2020-12-05-IA:2020-10-05 2.025388245 1.112569e+00 2.93820768 0.0000000  
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## IA:2021-01-28-C:2020-10-14 0.559481347 -3.533381e-01 1.47230078 0.8882296  
## C:2021-02-05-C:2020-10-14 0.838875499 -7.394394e-02 1.75169494 0.1281205  
## IA:2021-02-05-C:2020-10-14 0.912864041 4.460375e-05 1.82568348 0.0499694  
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## IA:2020-12-05-IA:2020-10-26 -0.317329364 -1.230149e+00 0.59549007 0.9999847  
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## IA:2021-02-12-IA:2020-10-26 0.872152774 -4.066666e-02 1.78497221 0.0854952  
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## IA:2021-02-26-IA:2020-10-26 1.130279882 2.174604e-01 2.04309932 0.0014562  
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## IA:2021-03-30-IA:2020-10-26 3.772947676 2.860128e+00 4.68576711 0.0000000  
## C:2021-04-15-IA:2020-10-26 4.296762463 3.383943e+00 5.20958190 0.0000000  
## IA:2021-04-15-IA:2020-10-26 5.026773310 4.113954e+00 5.93959275 0.0000000  
## IA:2020-11-05-C:2020-11-05 0.618503623 -2.943158e-01 1.53132306 0.7418037  
## C:2020-11-14-C:2020-11-05 1.093416661 1.805972e-01 2.00623610 0.0028458  
## IA:2020-11-14-C:2020-11-05 1.208552130 2.957327e-01 2.12137157 0.0003229  
## C:2020-11-25-C:2020-11-05 1.761866196 8.490468e-01 2.67468563 0.0000000  
## IA:2020-11-25-C:2020-11-05 0.944160267 3.134083e-02 1.85697970 0.0321036  
## C:2020-12-05-C:2020-11-05 2.147565498 1.234746e+00 3.06038494 0.0000000  
## IA:2020-12-05-C:2020-11-05 0.765554131 -1.472653e-01 1.67837357 0.2771123  
## C:2021-01-22-C:2020-11-05 0.809170795 -1.036486e-01 1.72199023 0.1787755  
## IA:2021-01-22-C:2020-11-05 0.538809490 -3.740099e-01 1.45162893 0.9232901  
## C:2021-01-28-C:2020-11-05 0.933054922 2.023548e-02 1.84587436 0.0376678  
## IA:2021-01-28-C:2020-11-05 1.089499040 1.766796e-01 2.00231848 0.0030510  
## C:2021-02-05-C:2020-11-05 1.368893192 4.560738e-01 2.28171263 0.0000107  
## IA:2021-02-05-C:2020-11-05 1.442881734 5.300623e-01 2.35570117 0.0000019  
## C:2021-02-12-C:2020-11-05 2.524174759 1.611355e+00 3.43699420 0.0000000  
## IA:2021-02-12-C:2020-11-05 1.955036269 1.042217e+00 2.86785571 0.0000000  
## C:2021-02-26-C:2020-11-05 2.470931250 1.558112e+00 3.38375069 0.0000000  
## IA:2021-02-26-C:2020-11-05 2.213163377 1.300344e+00 3.12598281 0.0000000  
## C:2021-03-15-C:2020-11-05 2.768557575 1.855738e+00 3.68137701 0.0000000  
## IA:2021-03-15-C:2020-11-05 2.971069742 2.058250e+00 3.88388918 0.0000000  
## C:2021-03-30-C:2020-11-05 5.304565058 4.391746e+00 6.21738450 0.0000000  
## IA:2021-03-30-C:2020-11-05 4.855831170 3.943012e+00 5.76865061 0.0000000  
## C:2021-04-15-C:2020-11-05 5.379645958 4.466827e+00 6.29246540 0.0000000  
## IA:2021-04-15-C:2020-11-05 6.109656805 5.196837e+00 7.02247624 0.0000000  
## C:2020-11-14-IA:2020-11-05 0.474913038 -4.379064e-01 1.38773247 0.9829871  
## IA:2020-11-14-IA:2020-11-05 0.590048507 -3.227709e-01 1.50286794 0.8204590  
## C:2020-11-25-IA:2020-11-05 1.143362572 2.305431e-01 2.05618201 0.0011409  
## IA:2020-11-25-IA:2020-11-05 0.325656644 -5.871628e-01 1.23847608 0.9999739  
## C:2020-12-05-IA:2020-11-05 1.529061875 6.162424e-01 2.44188131 0.0000002  
## IA:2020-12-05-IA:2020-11-05 0.147050508 -7.657689e-01 1.05986994 1.0000000  
## C:2021-01-22-IA:2020-11-05 0.190667172 -7.221523e-01 1.10348661 1.0000000  
## IA:2021-01-22-IA:2020-11-05 -0.079694133 -9.925136e-01 0.83312530 1.0000000  
## C:2021-01-28-IA:2020-11-05 0.314551299 -5.982681e-01 1.22737074 0.9999873  
## IA:2021-01-28-IA:2020-11-05 0.470995416 -4.418240e-01 1.38381485 0.9847841  
## C:2021-02-05-IA:2020-11-05 0.750389568 -1.624299e-01 1.66320901 0.3179506  
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## C:2021-03-30-IA:2020-11-05 4.686061435 3.773242e+00 5.59888087 0.0000000  
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## C:2021-04-15-IA:2020-11-05 4.761142334 3.848323e+00 5.67396177 0.0000000  
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## IA:2020-11-14-C:2020-11-14 0.115135469 -7.976840e-01 1.02795491 1.0000000  
## C:2020-11-25-C:2020-11-14 0.668449535 -2.443699e-01 1.58126897 0.5800249  
## IA:2020-11-25-C:2020-11-14 -0.149256394 -1.062076e+00 0.76356304 1.0000000  
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## IA:2020-12-05-C:2020-11-14 -0.327862530 -1.240682e+00 0.58495691 0.9999700  
## C:2021-01-22-C:2020-11-14 -0.284245865 -1.197065e+00 0.62857357 0.9999986  
## IA:2021-01-22-C:2020-11-14 -0.554607171 -1.467427e+00 0.35821227 0.8972820  
## C:2021-01-28-C:2020-11-14 -0.160361739 -1.073181e+00 0.75245770 1.0000000  
## IA:2021-01-28-C:2020-11-14 -0.003917621 -9.167371e-01 0.90890182 1.0000000  
## C:2021-02-05-C:2020-11-14 0.275476531 -6.373429e-01 1.18829597 0.9999993  
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## C:2021-02-12-C:2020-11-14 1.430758098 5.179387e-01 2.34357754 0.0000026  
## IA:2021-02-12-C:2020-11-14 0.861619608 -5.119983e-02 1.77443905 0.0975105  
## C:2021-02-26-C:2020-11-14 1.377514589 4.646952e-01 2.29033403 0.0000088  
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## IA:2021-03-15-C:2020-11-14 1.877653081 9.648336e-01 2.79047252 0.0000000  
## C:2021-03-30-C:2020-11-14 4.211148397 3.298329e+00 5.12396783 0.0000000  
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## C:2021-04-15-C:2020-11-14 4.286229297 3.373410e+00 5.19904873 0.0000000  
## IA:2021-04-15-C:2020-11-14 5.016240144 4.103421e+00 5.92905958 0.0000000  
## C:2020-11-25-IA:2020-11-14 0.553314066 -3.595054e-01 1.46613350 0.8996016  
## IA:2020-11-25-IA:2020-11-14 -0.264391863 -1.177211e+00 0.64842757 0.9999997  
## C:2020-12-05-IA:2020-11-14 0.939013368 2.619393e-02 1.85183281 0.0345853  
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## C:2021-01-22-IA:2020-11-14 -0.399381335 -1.312201e+00 0.51343810 0.9987860  
## IA:2021-01-22-IA:2020-11-14 -0.669742640 -1.582562e+00 0.24307680 0.5756444  
## C:2021-01-28-IA:2020-11-14 -0.275497208 -1.188317e+00 0.63732223 0.9999993  
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## IA:2021-01-28-C:2020-11-25 -0.672367156 -1.585187e+00 0.24045228 0.5667477  
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## IA:2021-02-26-IA:2020-11-25 1.269003110 3.561837e-01 2.18182255 0.0000937  
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## IA:2020-12-05-C:2020-12-05 -1.382011367 -2.294831e+00 -0.46919193 0.0000079  
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## IA:2021-03-15-C:2020-12-05 0.823504244 -8.931519e-02 1.73632368 0.1527432  
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## IA:2021-01-22-IA:2020-12-05 -0.226744641 -1.139564e+00 0.68607480 1.0000000  
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## IA:2021-03-30-IA:2020-12-05 4.090277039 3.177458e+00 5.00309648 0.0000000  
## C:2021-04-15-IA:2020-12-05 4.614091827 3.701272e+00 5.52691126 0.0000000  
## IA:2021-04-15-IA:2020-12-05 5.344102674 4.431283e+00 6.25692211 0.0000000  
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## C:2021-01-28-C:2021-01-22 0.123884127 -7.889353e-01 1.03670356 1.0000000  
## IA:2021-01-28-C:2021-01-22 0.280328244 -6.324912e-01 1.19314768 0.9999990  
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## IA:2021-01-28-IA:2021-01-22 0.550689550 -3.621299e-01 1.46350899 0.9042042  
## C:2021-02-05-IA:2021-01-22 0.830083702 -8.273574e-02 1.74290314 0.1417965  
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## IA:2021-03-30-IA:2021-01-22 4.317021680 3.404202e+00 5.22984112 0.0000000  
## C:2021-04-15-IA:2021-01-22 4.840836468 3.928017e+00 5.75365591 0.0000000  
## IA:2021-04-15-IA:2021-01-22 5.570847315 4.658028e+00 6.48366675 0.0000000  
## IA:2021-01-28-C:2021-01-28 0.156444117 -7.563753e-01 1.06926355 1.0000000  
## C:2021-02-05-C:2021-01-28 0.435838269 -4.769812e-01 1.34865771 0.9950282  
## IA:2021-02-05-C:2021-01-28 0.509826811 -4.029926e-01 1.42264625 0.9584842  
## C:2021-02-12-C:2021-01-28 1.591119837 6.783004e-01 2.50393927 0.0000001  
## IA:2021-02-12-C:2021-01-28 1.021981347 1.091619e-01 1.93480078 0.0096456  
## C:2021-02-26-C:2021-01-28 1.537876328 6.250569e-01 2.45069577 0.0000002  
## IA:2021-02-26-C:2021-01-28 1.280108455 3.672890e-01 2.19292789 0.0000742  
## C:2021-03-15-C:2021-01-28 1.835502653 9.226832e-01 2.74832209 0.0000000  
## IA:2021-03-15-C:2021-01-28 2.038014820 1.125195e+00 2.95083426 0.0000000  
## C:2021-03-30-C:2021-01-28 4.371510136 3.458691e+00 5.28432957 0.0000000  
## IA:2021-03-30-C:2021-01-28 3.922776248 3.009957e+00 4.83559569 0.0000000  
## C:2021-04-15-C:2021-01-28 4.446591035 3.533772e+00 5.35941047 0.0000000  
## IA:2021-04-15-C:2021-01-28 5.176601882 4.263782e+00 6.08942132 0.0000000  
## C:2021-02-05-IA:2021-01-28 0.279394152 -6.334253e-01 1.19221359 0.9999990  
## IA:2021-02-05-IA:2021-01-28 0.353382694 -5.594367e-01 1.26620213 0.9998678  
## C:2021-02-12-IA:2021-01-28 1.434675719 5.218563e-01 2.34749516 0.0000023  
## IA:2021-02-12-IA:2021-01-28 0.865537229 -4.728221e-02 1.77835667 0.0928903  
## C:2021-02-26-IA:2021-01-28 1.381432211 4.686128e-01 2.29425165 0.0000080  
## IA:2021-02-26-IA:2021-01-28 1.123664337 2.108449e-01 2.03648377 0.0016455  
## C:2021-03-15-IA:2021-01-28 1.679058536 7.662391e-01 2.59187797 0.0000000  
## IA:2021-03-15-IA:2021-01-28 1.881570702 9.687513e-01 2.79439014 0.0000000  
## C:2021-03-30-IA:2021-01-28 4.215066019 3.302247e+00 5.12788546 0.0000000  
## IA:2021-03-30-IA:2021-01-28 3.766332131 2.853513e+00 4.67915157 0.0000000  
## C:2021-04-15-IA:2021-01-28 4.290146918 3.377327e+00 5.20296636 0.0000000  
## IA:2021-04-15-IA:2021-01-28 5.020157765 4.107338e+00 5.93297720 0.0000000  
## IA:2021-02-05-C:2021-02-05 0.073988542 -8.388309e-01 0.98680798 1.0000000  
## C:2021-02-12-C:2021-02-05 1.155281567 2.424621e-01 2.06810100 0.0009110  
## IA:2021-02-12-C:2021-02-05 0.586143077 -3.266764e-01 1.49896251 0.8301466  
## C:2021-02-26-C:2021-02-05 1.102038058 1.892186e-01 2.01485750 0.0024388  
## IA:2021-02-26-C:2021-02-05 0.844270185 -6.854925e-02 1.75708962 0.1202522  
## C:2021-03-15-C:2021-02-05 1.399664383 4.868449e-01 2.31248382 0.0000053  
## IA:2021-03-15-C:2021-02-05 1.602176550 6.893571e-01 2.51499599 0.0000000  
## C:2021-03-30-C:2021-02-05 3.935671866 3.022852e+00 4.84849130 0.0000000  
## IA:2021-03-30-C:2021-02-05 3.486937978 2.574119e+00 4.39975742 0.0000000  
## C:2021-04-15-C:2021-02-05 4.010752766 3.097933e+00 4.92357220 0.0000000  
## IA:2021-04-15-C:2021-02-05 4.740763613 3.827944e+00 5.65358305 0.0000000  
## C:2021-02-12-IA:2021-02-05 1.081293025 1.684736e-01 1.99411246 0.0035267  
## IA:2021-02-12-IA:2021-02-05 0.512154535 -4.006649e-01 1.42497397 0.9562110  
## C:2021-02-26-IA:2021-02-05 1.028049517 1.152301e-01 1.94086895 0.0087318  
## IA:2021-02-26-IA:2021-02-05 0.770281643 -1.425378e-01 1.68310108 0.2650610  
## C:2021-03-15-IA:2021-02-05 1.325675841 4.128564e-01 2.23849528 0.0000278  
## IA:2021-03-15-IA:2021-02-05 1.528188008 6.153686e-01 2.44100745 0.0000002  
## C:2021-03-30-IA:2021-02-05 3.861683324 2.948864e+00 4.77450276 0.0000000  
## IA:2021-03-30-IA:2021-02-05 3.412949436 2.500130e+00 4.32576887 0.0000000  
## C:2021-04-15-IA:2021-02-05 3.936764224 3.023945e+00 4.84958366 0.0000000  
## IA:2021-04-15-IA:2021-02-05 4.666775071 3.753956e+00 5.57959451 0.0000000  
## IA:2021-02-12-C:2021-02-12 -0.569138490 -1.481958e+00 0.34368095 0.8688521  
## C:2021-02-26-C:2021-02-12 -0.053243509 -9.660629e-01 0.85957593 1.0000000  
## IA:2021-02-26-C:2021-02-12 -0.311011382 -1.223831e+00 0.60180806 0.9999900  
## C:2021-03-15-C:2021-02-12 0.244382816 -6.684366e-01 1.15720225 1.0000000  
## IA:2021-03-15-C:2021-02-12 0.446894983 -4.659245e-01 1.35971442 0.9927631  
## C:2021-03-30-C:2021-02-12 2.780390299 1.867571e+00 3.69320974 0.0000000  
## IA:2021-03-30-C:2021-02-12 2.331656411 1.418837e+00 3.24447585 0.0000000  
## C:2021-04-15-C:2021-02-12 2.855471199 1.942652e+00 3.76829064 0.0000000  
## IA:2021-04-15-C:2021-02-12 3.585482046 2.672663e+00 4.49830148 0.0000000  
## C:2021-02-26-IA:2021-02-12 0.515894981 -3.969245e-01 1.42871442 0.9523668  
## IA:2021-02-26-IA:2021-02-12 0.258127108 -6.546923e-01 1.17094655 0.9999998  
## C:2021-03-15-IA:2021-02-12 0.813521306 -9.929813e-02 1.72634074 0.1705524  
## IA:2021-03-15-IA:2021-02-12 1.016033473 1.032140e-01 1.92885291 0.0106257  
## C:2021-03-30-IA:2021-02-12 3.349528789 2.436709e+00 4.26234823 0.0000000  
## IA:2021-03-30-IA:2021-02-12 2.900794901 1.987975e+00 3.81361434 0.0000000  
## C:2021-04-15-IA:2021-02-12 3.424609689 2.511790e+00 4.33742913 0.0000000  
## IA:2021-04-15-IA:2021-02-12 4.154620536 3.241801e+00 5.06743997 0.0000000  
## IA:2021-02-26-C:2021-02-26 -0.257767873 -1.170587e+00 0.65505156 0.9999998  
## C:2021-03-15-C:2021-02-26 0.297626325 -6.151931e-01 1.21044576 0.9999961  
## IA:2021-03-15-C:2021-02-26 0.500138492 -4.126809e-01 1.41295793 0.9670090  
## C:2021-03-30-C:2021-02-26 2.833633808 1.920814e+00 3.74645325 0.0000000  
## IA:2021-03-30-C:2021-02-26 2.384899920 1.472080e+00 3.29771936 0.0000000  
## C:2021-04-15-C:2021-02-26 2.908714707 1.995895e+00 3.82153414 0.0000000  
## IA:2021-04-15-C:2021-02-26 3.638725555 2.725906e+00 4.55154499 0.0000000  
## C:2021-03-15-IA:2021-02-26 0.555394198 -3.574252e-01 1.46821364 0.8958534  
## IA:2021-03-15-IA:2021-02-26 0.757906365 -1.549131e-01 1.67072580 0.2972996  
## C:2021-03-30-IA:2021-02-26 3.091401681 2.178582e+00 4.00422112 0.0000000  
## IA:2021-03-30-IA:2021-02-26 2.642667793 1.729848e+00 3.55548723 0.0000000  
## C:2021-04-15-IA:2021-02-26 3.166482581 2.253663e+00 4.07930202 0.0000000  
## IA:2021-04-15-IA:2021-02-26 3.896493428 2.983674e+00 4.80931287 0.0000000  
## IA:2021-03-15-C:2021-03-15 0.202512167 -7.103073e-01 1.11533160 1.0000000  
## C:2021-03-30-C:2021-03-15 2.536007483 1.623188e+00 3.44882692 0.0000000  
## IA:2021-03-30-C:2021-03-15 2.087273595 1.174454e+00 3.00009303 0.0000000  
## C:2021-04-15-C:2021-03-15 2.611088383 1.698269e+00 3.52390782 0.0000000  
## IA:2021-04-15-C:2021-03-15 3.341099230 2.428280e+00 4.25391867 0.0000000  
## C:2021-03-30-IA:2021-03-15 2.333495316 1.420676e+00 3.24631475 0.0000000  
## IA:2021-03-30-IA:2021-03-15 1.884761428 9.719420e-01 2.79758087 0.0000000  
## C:2021-04-15-IA:2021-03-15 2.408576216 1.495757e+00 3.32139565 0.0000000  
## IA:2021-04-15-IA:2021-03-15 3.138587063 2.225768e+00 4.05140650 0.0000000  
## IA:2021-03-30-C:2021-03-30 -0.448733888 -1.361553e+00 0.46408555 0.9923135  
## C:2021-04-15-C:2021-03-30 0.075080900 -8.377385e-01 0.98790034 1.0000000  
## IA:2021-04-15-C:2021-03-30 0.805091747 -1.077277e-01 1.71791118 0.1867438  
## C:2021-04-15-IA:2021-03-30 0.523814788 -3.890046e-01 1.43663422 0.9434194  
## IA:2021-04-15-IA:2021-03-30 1.253825635 3.410062e-01 2.16664507 0.0001286  
## IA:2021-04-15-C:2021-04-15 0.730010847 -1.828086e-01 1.64283028 0.3776740

Efecto de la IA sobre los niveles de glucosa plasmática

t2way(Glucosa ~ Condicion + Fechas + Condicion:Fechas, data = b,)

## Call:  
## t2way(formula = Glucosa ~ Condicion + Fechas + Condicion:Fechas,   
## data = b)  
##   
## value p.value  
## Condicion 2.4961 0.119  
## Fechas 335.2355 0.001  
## Condicion:Fechas 31.5386 0.027

anovaglucosa <- aov(Glucosa ~ Condicion + Fechas + Condicion:Fechas, data = b)  
anova(anovaglucosa)

## Analysis of Variance Table  
##   
## Response: Glucosa  
## Df Sum Sq Mean Sq F value Pr(>F)   
## Condicion 1 0.00 0.000 0.0000 0.99940   
## Fechas 14 517.82 36.987 23.9430 < 2e-16 \*\*\*  
## Condicion:Fechas 14 40.28 2.877 1.8623 0.02861 \*   
## Residuals 423 653.45 1.545   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

TukeyHSD(anovaglucosa)

## Tukey multiple comparisons of means  
## 95% family-wise confidence level  
##   
## Fit: aov(formula = Glucosa ~ Condicion + Fechas + Condicion:Fechas, data = b)  
##   
## $Condicion  
## diff lwr upr p adj  
## IA-C -8.834111e-05 -0.229781 0.2296043 0.9993972  
##   
## $Fechas  
## diff lwr upr p adj  
## 2020-10-14-2020-10-05 -0.563007228 -2.2311188 1.105104387 0.9981879  
## 2020-10-26-2020-10-05 -0.291743130 -1.9598547 1.376368485 0.9999994  
## 2020-11-05-2020-10-05 -0.198704816 -1.7204102 1.323000537 1.0000000  
## 2020-11-14-2020-10-05 -0.169572910 -1.6587053 1.319559472 1.0000000  
## 2020-11-25-2020-10-05 -0.614987305 -2.0780180 0.848043364 0.9838089  
## 2020-12-05-2020-10-05 -0.336178794 -1.7402711 1.067913494 0.9999658  
## 2021-01-22-2020-10-05 -0.975857713 -2.4052510 0.453535571 0.5693115  
## 2021-01-28-2020-10-05 -1.785145077 -3.2089219 -0.361368292 0.0021578  
## 2021-02-05-2020-10-05 -0.283608368 -1.7073852 1.140168417 0.9999966  
## 2021-02-12-2020-10-05 0.204809916 -1.1908324 1.600452224 0.9999999  
## 2021-02-26-2020-10-05 -1.607177897 -3.0069432 -0.207412560 0.0088914  
## 2021-03-15-2020-10-05 -2.275558744 -3.6712011 -0.879916436 0.0000049  
## 2021-03-30-2020-10-05 -2.842778658 -4.2384210 -1.447136350 0.0000000  
## 2021-04-15-2020-10-05 -2.901167746 -4.2968101 -1.505525438 0.0000000  
## 2020-10-26-2020-10-14 0.271264098 -1.3314057 1.873933898 0.9999996  
## 2020-11-05-2020-10-14 0.364302412 -1.0853670 1.813971790 0.9999383  
## 2020-11-14-2020-10-14 0.393434318 -1.0220053 1.808873959 0.9997952  
## 2020-11-25-2020-10-14 -0.051980077 -1.4399328 1.335972683 1.0000000  
## 2020-12-05-2020-10-14 0.226828434 -1.0988523 1.552509119 0.9999995  
## 2021-01-22-2020-10-14 -0.412850485 -1.7652999 0.939598880 0.9993992  
## 2021-01-28-2020-10-14 -1.222137850 -2.5686498 0.124374111 0.1232893  
## 2021-02-05-2020-10-14 0.279398860 -1.0671131 1.625910820 0.9999943  
## 2021-02-12-2020-10-14 0.767817144 -0.5489105 2.084544746 0.8037279  
## 2021-02-26-2020-10-14 -1.044170669 -2.3652676 0.276926271 0.3106690  
## 2021-03-15-2020-10-14 -1.712551516 -3.0292791 -0.395823914 0.0011020  
## 2021-03-30-2020-10-14 -2.279771430 -3.5964990 -0.963043828 0.0000007  
## 2021-04-15-2020-10-14 -2.338160519 -3.6548881 -1.021432916 0.0000003  
## 2020-11-05-2020-10-26 0.093038314 -1.3566311 1.542707692 1.0000000  
## 2020-11-14-2020-10-26 0.122170220 -1.2932694 1.537609861 1.0000000  
## 2020-11-25-2020-10-26 -0.323244175 -1.7111969 1.064708585 0.9999757  
## 2020-12-05-2020-10-26 -0.044435664 -1.3701164 1.281245021 1.0000000  
## 2021-01-22-2020-10-26 -0.684114583 -2.0365639 0.668334782 0.9242173  
## 2021-01-28-2020-10-26 -1.493401948 -2.8399139 -0.146889987 0.0144620  
## 2021-02-05-2020-10-26 0.008134761 -1.3383772 1.354646722 1.0000000  
## 2021-02-12-2020-10-26 0.496553046 -0.8201746 1.813280648 0.9942806  
## 2021-02-26-2020-10-26 -1.315434767 -2.6365317 0.005662173 0.0523020  
## 2021-03-15-2020-10-26 -1.983815614 -3.3005432 -0.667088012 0.0000426  
## 2021-03-30-2020-10-26 -2.551035528 -3.8677631 -1.234307926 0.0000000  
## 2021-04-15-2020-10-26 -2.609424617 -3.9261522 -1.292697014 0.0000000  
## 2020-11-14-2020-11-05 0.029131906 -1.2104084 1.268672224 1.0000000  
## 2020-11-25-2020-11-05 -0.416282489 -1.6243403 0.791775326 0.9977398  
## 2020-12-05-2020-11-05 -0.137473978 -1.2734406 0.998492615 1.0000000  
## 2021-01-22-2020-11-05 -0.777152897 -1.9442476 0.389941832 0.6121722  
## 2021-01-28-2020-11-05 -1.586440261 -2.7466494 -0.426231107 0.0004042  
## 2021-02-05-2020-11-05 -0.084903552 -1.2451127 1.075305602 1.0000000  
## 2021-02-12-2020-11-05 0.403514732 -0.7219907 1.529020129 0.9965788  
## 2021-02-26-2020-11-05 -1.408473081 -2.5390870 -0.277859112 0.0024157  
## 2021-03-15-2020-11-05 -2.076853928 -3.2023593 -0.951348531 0.0000001  
## 2021-03-30-2020-11-05 -2.644073842 -3.7695792 -1.518568445 0.0000000  
## 2021-04-15-2020-11-05 -2.702462930 -3.8279683 -1.576957533 0.0000000  
## 2020-11-25-2020-11-14 -0.445414395 -1.6121756 0.721346831 0.9935406  
## 2020-12-05-2020-11-14 -0.166605884 -1.2585528 0.925341080 0.9999999  
## 2021-01-22-2020-11-14 -0.806284803 -1.9305793 0.318009722 0.4816169  
## 2021-01-28-2020-11-14 -1.615572167 -2.7327173 -0.498426987 0.0001161  
## 2021-02-05-2020-11-14 -0.114035458 -1.2311806 1.003109722 1.0000000  
## 2021-02-12-2020-11-14 0.374382826 -0.7066771 1.455442710 0.9976175  
## 2021-02-26-2020-11-14 -1.437604986 -2.5239825 -0.351227511 0.0007882  
## 2021-03-15-2020-11-14 -2.105985834 -3.1870457 -1.024925950 0.0000000  
## 2021-03-30-2020-11-14 -2.673205748 -3.7542656 -1.592145864 0.0000000  
## 2021-04-15-2020-11-14 -2.731594836 -3.8126547 -1.650534953 0.0000000  
## 2020-12-05-2020-11-25 0.278808511 -0.7772652 1.334882210 0.9998885  
## 2021-01-22-2020-11-25 -0.360870408 -1.4503573 0.728616473 0.9985197  
## 2021-01-28-2020-11-25 -1.170157772 -2.2522654 -0.088050181 0.0201556  
## 2021-02-05-2020-11-25 0.331378937 -0.7507287 1.413486528 0.9993773  
## 2021-02-12-2020-11-25 0.819797221 -0.2250157 1.864610102 0.3228301  
## 2021-02-26-2020-11-25 -0.992190592 -2.0425046 0.058123411 0.0873647  
## 2021-03-15-2020-11-25 -1.660571439 -2.7053843 -0.615758557 0.0000102  
## 2021-03-30-2020-11-25 -2.227791353 -3.2726042 -1.182978472 0.0000000  
## 2021-04-15-2020-11-25 -2.286180441 -3.3309933 -1.241367560 0.0000000  
## 2021-01-22-2020-12-05 -0.639678919 -1.6486378 0.369279990 0.6911461  
## 2021-01-28-2020-12-05 -1.448966283 -2.4499524 -0.447980142 0.0001135  
## 2021-02-05-2020-12-05 0.052570426 -0.9484157 1.053556567 1.0000000  
## 2021-02-12-2020-12-05 0.540988710 -0.4195582 1.501535623 0.8412319  
## 2021-02-26-2020-12-05 -1.270999102 -2.2375269 -0.304471338 0.0008914  
## 2021-03-15-2020-12-05 -1.939379949 -2.8999269 -0.978833036 0.0000000  
## 2021-03-30-2020-12-05 -2.506599864 -3.4671468 -1.546052951 0.0000000  
## 2021-04-15-2020-12-05 -2.564988952 -3.5255359 -1.604442039 0.0000000  
## 2021-01-28-2021-01-22 -0.809287364 -1.8454646 0.226889870 0.3305855  
## 2021-02-05-2021-01-22 0.692249345 -0.3439279 1.728426579 0.6066105  
## 2021-02-12-2021-01-22 1.180667629 0.1835015 2.177833803 0.0055887  
## 2021-02-26-2021-01-22 -0.631320184 -1.6342489 0.371608490 0.7019467  
## 2021-03-15-2021-01-22 -1.299701031 -2.2968672 -0.302534857 0.0010579  
## 2021-03-30-2021-01-22 -1.866920945 -2.8640871 -0.869754771 0.0000000  
## 2021-04-15-2021-01-22 -1.925310033 -2.9224762 -0.928143860 0.0000000  
## 2021-02-05-2021-01-28 1.501536709 0.4731212 2.529952207 0.0000925  
## 2021-02-12-2021-01-28 1.989954994 1.0008566 2.979053347 0.0000000  
## 2021-02-26-2021-01-28 0.177967181 -0.8169404 1.172874764 0.9999991  
## 2021-03-15-2021-01-28 -0.490413666 -1.4795120 0.498684687 0.9348409  
## 2021-03-30-2021-01-28 -1.057633580 -2.0467319 -0.068535227 0.0232116  
## 2021-04-15-2021-01-28 -1.116022669 -2.1051210 -0.126924315 0.0114135  
## 2021-02-12-2021-02-05 0.488418284 -0.5006801 1.477516638 0.9368481  
## 2021-02-26-2021-02-05 -1.323569528 -2.3184771 -0.328661945 0.0007095  
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## C:2021-02-05-IA:2021-01-28 1.576018627 -0.086122464 3.238159719 0.0925954  
## IA:2021-02-05-IA:2021-01-28 1.441932493 -0.220208599 3.104073585 0.2128757  
## C:2021-02-12-IA:2021-01-28 2.374230736 0.771589244 3.976872227 0.0000169  
## IA:2021-02-12-IA:2021-01-28 1.620556953 0.017915462 3.223198445 0.0434399  
## C:2021-02-26-IA:2021-01-28 0.111345321 -1.509270282 1.731960924 1.0000000  
## IA:2021-02-26-IA:2021-01-28 0.255761499 -1.346879993 1.858402990 1.0000000  
## C:2021-03-15-IA:2021-01-28 -0.697848477 -2.300489969 0.904793014 0.9988044  
## IA:2021-03-15-IA:2021-01-28 -0.268101153 -1.870742645 1.334540338 1.0000000  
## C:2021-03-30-IA:2021-01-28 -0.726602609 -2.329244101 0.876038882 0.9976651  
## IA:2021-03-30-IA:2021-01-28 -1.373786849 -2.976428341 0.228854642 0.2339386  
## C:2021-04-15-IA:2021-01-28 -0.991423810 -2.594065301 0.611217682 0.8751259  
## IA:2021-04-15-IA:2021-01-28 -1.225743826 -2.828385318 0.376897665 0.4763643  
## IA:2021-02-05-C:2021-02-05 -0.134086134 -1.743447326 1.475275057 1.0000000  
## C:2021-02-12-C:2021-02-05 0.798212108 -0.749621922 2.346046139 0.9842076  
## IA:2021-02-12-C:2021-02-05 0.044538326 -1.503295705 1.592372357 1.0000000  
## C:2021-02-26-C:2021-02-05 -1.464673307 -3.031110465 0.101763851 0.1072206  
## IA:2021-02-26-C:2021-02-05 -1.320257129 -2.868091159 0.227576902 0.2429680  
## C:2021-03-15-C:2021-02-05 -2.273867105 -3.821701136 -0.726033074 0.0000216  
## IA:2021-03-15-C:2021-02-05 -1.844119780 -3.391953811 -0.296285750 0.0032277  
## C:2021-03-30-C:2021-02-05 -2.302621237 -3.850455268 -0.754787206 0.0000149  
## IA:2021-03-30-C:2021-02-05 -2.949805477 -4.497639508 -1.401971446 0.0000000  
## C:2021-04-15-C:2021-02-05 -2.567442437 -4.115276468 -1.019608406 0.0000004  
## IA:2021-04-15-C:2021-02-05 -2.801762454 -4.349596485 -1.253928423 0.0000000  
## C:2021-02-12-IA:2021-02-05 0.932298243 -0.615535788 2.480132274 0.9031989  
## IA:2021-02-12-IA:2021-02-05 0.178624460 -1.369209570 1.726458491 1.0000000  
## C:2021-02-26-IA:2021-02-05 -1.330587172 -2.897024330 0.235849986 0.2506857  
## IA:2021-02-26-IA:2021-02-05 -1.186170994 -2.734005025 0.361663037 0.4717936  
## C:2021-03-15-IA:2021-02-05 -2.139780970 -3.687615001 -0.591946939 0.0001155  
## IA:2021-03-15-IA:2021-02-05 -1.710033646 -3.257867677 -0.162199615 0.0121236  
## C:2021-03-30-IA:2021-02-05 -2.168535102 -3.716369133 -0.620701071 0.0000813  
## IA:2021-03-30-IA:2021-02-05 -2.815719342 -4.363553373 -1.267885311 0.0000000  
## C:2021-04-15-IA:2021-02-05 -2.433356303 -3.981190333 -0.885522272 0.0000026  
## IA:2021-04-15-IA:2021-02-05 -2.667676319 -4.215510350 -1.119842288 0.0000001  
## IA:2021-02-12-C:2021-02-12 -0.753673782 -2.237431488 0.730083923 0.9871503  
## C:2021-02-26-C:2021-02-12 -2.262885415 -3.766039470 -0.759731361 0.0000104  
## IA:2021-02-26-C:2021-02-12 -2.118469237 -3.602226943 -0.634711531 0.0000486  
## C:2021-03-15-C:2021-02-12 -3.072079213 -4.555836919 -1.588321508 0.0000000  
## IA:2021-03-15-C:2021-02-12 -2.642331889 -4.126089595 -1.158574183 0.0000000  
## C:2021-03-30-C:2021-02-12 -3.100833345 -4.584591051 -1.617075640 0.0000000  
## IA:2021-03-30-C:2021-02-12 -3.748017585 -5.231775291 -2.264259880 0.0000000  
## C:2021-04-15-C:2021-02-12 -3.365654545 -4.849412251 -1.881896840 0.0000000  
## IA:2021-04-15-C:2021-02-12 -3.599974562 -5.083732268 -2.116216856 0.0000000  
## C:2021-02-26-IA:2021-02-12 -1.509211633 -3.012365687 -0.006057578 0.0475426  
## IA:2021-02-26-IA:2021-02-12 -1.364795455 -2.848553160 0.118962251 0.1263877  
## C:2021-03-15-IA:2021-02-12 -2.318405431 -3.802163136 -0.834647725 0.0000032  
## IA:2021-03-15-IA:2021-02-12 -1.888658107 -3.372415812 -0.404900401 0.0008322  
## C:2021-03-30-IA:2021-02-12 -2.347159563 -3.830917268 -0.863401857 0.0000021  
## IA:2021-03-30-IA:2021-02-12 -2.994343803 -4.478101508 -1.510586097 0.0000000  
## C:2021-04-15-IA:2021-02-12 -2.611980763 -4.095738469 -1.128223057 0.0000000  
## IA:2021-04-15-IA:2021-02-12 -2.846300780 -4.330058485 -1.362543074 0.0000000  
## IA:2021-02-26-C:2021-02-26 0.144416178 -1.358737876 1.647570233 1.0000000  
## C:2021-03-15-C:2021-02-26 -0.809193798 -2.312347852 0.693960256 0.9724278  
## IA:2021-03-15-C:2021-02-26 -0.379446474 -1.882600528 1.123707581 1.0000000  
## C:2021-03-30-C:2021-02-26 -0.837947930 -2.341101984 0.665206124 0.9579529  
## IA:2021-03-30-C:2021-02-26 -1.485132170 -2.988286224 0.018021884 0.0579684  
## C:2021-04-15-C:2021-02-26 -1.102769130 -2.605923185 0.400384924 0.5720054  
## IA:2021-04-15-C:2021-02-26 -1.337089147 -2.840243201 0.166064908 0.1724191  
## C:2021-03-15-IA:2021-02-26 -0.953609976 -2.437367682 0.530147729 0.8254598  
## IA:2021-03-15-IA:2021-02-26 -0.523862652 -2.007620358 0.959895054 0.9999769  
## C:2021-03-30-IA:2021-02-26 -0.982364108 -2.466121814 0.501393597 0.7788701  
## IA:2021-03-30-IA:2021-02-26 -1.629548348 -3.113306054 -0.145790643 0.0133252  
## C:2021-04-15-IA:2021-02-26 -1.247185308 -2.730943014 0.236572397 0.2707499  
## IA:2021-04-15-IA:2021-02-26 -1.481505325 -2.965263031 0.002252381 0.0509537  
## IA:2021-03-15-C:2021-03-15 0.429747324 -1.054010381 1.913505030 0.9999997  
## C:2021-03-30-C:2021-03-15 -0.028754132 -1.512511838 1.455003574 1.0000000  
## IA:2021-03-30-C:2021-03-15 -0.675938372 -2.159696078 0.807819333 0.9974773  
## C:2021-04-15-C:2021-03-15 -0.293575332 -1.777333038 1.190182373 1.0000000  
## IA:2021-04-15-C:2021-03-15 -0.527895349 -2.011653054 0.955862357 0.9999729  
## C:2021-03-30-IA:2021-03-15 -0.458501456 -1.942259162 1.025256249 0.9999987  
## IA:2021-03-30-IA:2021-03-15 -1.105685696 -2.589443402 0.378072009 0.5363640  
## C:2021-04-15-IA:2021-03-15 -0.723322656 -2.207080362 0.760435049 0.9928434  
## IA:2021-04-15-IA:2021-03-15 -0.957642673 -2.441400379 0.526115032 0.8192647  
## IA:2021-03-30-C:2021-03-30 -0.647184240 -2.130941946 0.836573466 0.9987693  
## C:2021-04-15-C:2021-03-30 -0.264821200 -1.748578906 1.218936505 1.0000000  
## IA:2021-04-15-C:2021-03-30 -0.499141217 -1.982898922 0.984616489 0.9999916  
## C:2021-04-15-IA:2021-03-30 0.382363040 -1.101394666 1.866120745 1.0000000  
## IA:2021-04-15-IA:2021-03-30 0.148043023 -1.335714682 1.631800729 1.0000000  
## IA:2021-04-15-C:2021-04-15 -0.234320017 -1.718077722 1.249437689 1.0000000

Efecto de la IA sobre los niveles de calcio plasmáticos

t2way(Calcio ~ Condicion + Fechas + Condicion:Fechas, data = b,)

## Call:  
## t2way(formula = Calcio ~ Condicion + Fechas + Condicion:Fechas,   
## data = b)  
##   
## value p.value  
## Condicion 7.5778 0.008  
## Fechas 452.1435 0.001  
## Condicion:Fechas 43.4384 0.003

anovacalcio <- aov(Calcio ~ Condicion + Fechas + Condicion:Fechas, data = b)  
anova(anovacalcio)

## Analysis of Variance Table  
##   
## Response: Calcio  
## Df Sum Sq Mean Sq F value Pr(>F)   
## Condicion 1 1.273 1.2732 9.0749 0.002747 \*\*   
## Fechas 14 58.252 4.1609 29.6566 < 2.2e-16 \*\*\*  
## Condicion:Fechas 14 3.004 0.2146 1.5293 0.097093 .   
## Residuals 423 59.348 0.1403   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

TukeyHSD(anovacalcio)

## Tukey multiple comparisons of means  
## 95% family-wise confidence level  
##   
## Fit: aov(formula = Calcio ~ Condicion + Fechas + Condicion:Fechas, data = b)  
##   
## $Condicion  
## diff lwr upr p adj  
## IA-C 0.1060895 0.03686764 0.1753113 0.0027469  
##   
## $Fechas  
## diff lwr upr p adj  
## 2020-10-14-2020-10-05 0.117023273 -0.3856909221 0.619737469 0.9999758  
## 2020-10-26-2020-10-05 0.309929279 -0.1927849161 0.812643475 0.7321675  
## 2020-11-05-2020-10-05 0.719551938 0.2609597942 1.178144082 0.0000145  
## 2020-11-14-2020-10-05 0.908351987 0.4595762695 1.357127705 0.0000000  
## 2020-11-25-2020-10-05 1.177099061 0.7361895441 1.618008577 0.0000000  
## 2020-12-05-2020-10-05 1.480374889 1.0572274701 1.903522309 0.0000000  
## 2021-01-22-2020-10-05 1.334632054 0.9038597434 1.765404364 0.0000000  
## 2021-01-28-2020-10-05 1.009984382 0.5809047005 1.439064064 0.0000000  
## 2021-02-05-2020-10-05 1.479067080 1.0499873985 1.908146762 0.0000000  
## 2021-02-12-2020-10-05 1.261366499 0.8407656269 1.681967371 0.0000000  
## 2021-02-26-2020-10-05 1.310732365 0.8888889467 1.732575783 0.0000000  
## 2021-03-15-2020-10-05 1.030115541 0.6095146685 1.450716413 0.0000000  
## 2021-03-30-2020-10-05 1.152552660 0.7319517875 1.573153532 0.0000000  
## 2021-04-15-2020-10-05 1.306265328 0.8856644562 1.726866200 0.0000000  
## 2020-10-26-2020-10-14 0.192906006 -0.2900861700 0.675898182 0.9899708  
## 2020-11-05-2020-10-14 0.602528665 0.1656458038 1.039411526 0.0003368  
## 2020-11-14-2020-10-14 0.791328714 0.3647615742 1.217895854 0.0000001  
## 2020-11-25-2020-10-14 1.060075787 0.6417922930 1.478359282 0.0000000  
## 2020-12-05-2020-10-14 1.363351616 0.9638348853 1.762868347 0.0000000  
## 2021-01-22-2020-10-14 1.217608781 0.8100248465 1.625192715 0.0000000  
## 2021-01-28-2020-10-14 0.892961109 0.4871665142 1.298755704 0.0000000  
## 2021-02-05-2020-10-14 1.362043807 0.9562492123 1.767838402 0.0000000  
## 2021-02-12-2020-10-14 1.144343226 0.7475246609 1.541161791 0.0000000  
## 2021-02-26-2020-10-14 1.193709091 0.7955737512 1.591844432 0.0000000  
## 2021-03-15-2020-10-14 0.913092267 0.5162737025 1.309910832 0.0000000  
## 2021-03-30-2020-10-14 1.035529386 0.6387108214 1.432347951 0.0000000  
## 2021-04-15-2020-10-14 1.189242055 0.7924234901 1.586060620 0.0000000  
## 2020-11-05-2020-10-26 0.409622659 -0.0272602022 0.846505520 0.0934646  
## 2020-11-14-2020-10-26 0.598422708 0.1718555682 1.024989848 0.0002323  
## 2020-11-25-2020-10-26 0.867169781 0.4488862870 1.285453276 0.0000000  
## 2020-12-05-2020-10-26 1.170445610 0.7709288792 1.569962341 0.0000000  
## 2021-01-22-2020-10-26 1.024702775 0.6171188405 1.432286709 0.0000000  
## 2021-01-28-2020-10-26 0.700055103 0.2942605082 1.105849698 0.0000008  
## 2021-02-05-2020-10-26 1.169137801 0.7633432062 1.574932396 0.0000000  
## 2021-02-12-2020-10-26 0.951437220 0.5546186548 1.348255785 0.0000000  
## 2021-02-26-2020-10-26 1.000803085 0.6026677452 1.398938426 0.0000000  
## 2021-03-15-2020-10-26 0.720186261 0.3233676965 1.117004826 0.0000001  
## 2021-03-30-2020-10-26 0.842623380 0.4458048154 1.239441945 0.0000000  
## 2021-04-15-2020-10-26 0.996336049 0.5995174841 1.393154614 0.0000000  
## 2020-11-14-2020-11-05 0.188800049 -0.1847567969 0.562356895 0.9246873  
## 2020-11-25-2020-11-05 0.457547122 0.0934780712 0.821616173 0.0020699  
## 2020-12-05-2020-11-05 0.760822951 0.4184798329 1.103166069 0.0000000  
## 2021-01-22-2020-11-05 0.615080116 0.2633559969 0.966804234 0.0000005  
## 2021-01-28-2020-11-05 0.290432444 -0.0592165879 0.640081476 0.2330298  
## 2021-02-05-2020-11-05 0.759515142 0.4098661101 1.109164174 0.0000000  
## 2021-02-12-2020-11-05 0.541814561 0.2026241042 0.881005017 0.0000088  
## 2021-02-26-2020-11-05 0.591180426 0.2504504138 0.931910439 0.0000007  
## 2021-03-15-2020-11-05 0.310563602 -0.0286268542 0.649754059 0.1147121  
## 2021-03-30-2020-11-05 0.433000721 0.0938102648 0.772191178 0.0015614  
## 2021-04-15-2020-11-05 0.586713390 0.2475229334 0.925903846 0.0000008  
## 2020-11-25-2020-11-14 0.268747073 -0.0828765385 0.620370685 0.3678173  
## 2020-12-05-2020-11-14 0.572022902 0.2429458579 0.901099946 0.0000007  
## 2021-01-22-2020-11-14 0.426280066 0.0874545273 0.765105606 0.0020308  
## 2021-01-28-2020-11-14 0.101632395 -0.2350385660 0.438303356 0.9994703  
## 2021-02-05-2020-11-14 0.570715093 0.2340441320 0.907386054 0.0000015  
## 2021-02-12-2020-11-14 0.353014512 0.0272184770 0.678810546 0.0196452  
## 2021-02-26-2020-11-14 0.402380377 0.0749817947 0.729778960 0.0030469  
## 2021-03-15-2020-11-14 0.121763553 -0.2040324814 0.447559588 0.9947726  
## 2021-03-30-2020-11-14 0.244200672 -0.0815953624 0.569996707 0.4021845  
## 2021-04-15-2020-11-14 0.397913341 0.0721173063 0.723709375 0.0033848  
## 2020-12-05-2020-11-25 0.303275829 -0.0149901884 0.621541846 0.0806588  
## 2021-01-22-2020-11-25 0.157532993 -0.1708026623 0.485868649 0.9495994  
## 2021-01-28-2020-11-25 -0.167114678 -0.4932264576 0.158997101 0.9165893  
## 2021-02-05-2020-11-25 0.301968020 -0.0241437596 0.628079799 0.1042712  
## 2021-02-12-2020-11-25 0.084267438 -0.2306049371 0.399139814 0.9998689  
## 2021-02-26-2020-11-25 0.133633304 -0.1828969292 0.450163537 0.9831528  
## 2021-03-15-2020-11-25 -0.146983520 -0.4618558955 0.167888856 0.9596556  
## 2021-03-30-2020-11-25 -0.024546401 -0.3394187765 0.290325975 1.0000000  
## 2021-04-15-2020-11-25 0.129166268 -0.1857061079 0.444038643 0.9870839  
## 2021-01-22-2020-12-05 -0.145742836 -0.4498099983 0.158324327 0.9500015  
## 2021-01-28-2020-12-05 -0.470390507 -0.7720549388 -0.168726075 0.0000172  
## 2021-02-05-2020-12-05 -0.001307809 -0.3029722408 0.300356623 1.0000000  
## 2021-02-12-2020-12-05 -0.219008390 -0.5084857636 0.070468983 0.3856787  
## 2021-02-26-2020-12-05 -0.169642525 -0.4609223306 0.121637281 0.8051588  
## 2021-03-15-2020-12-05 -0.450259349 -0.7397367220 -0.160781976 0.0000185  
## 2021-03-30-2020-12-05 -0.327822230 -0.6172996030 -0.038344857 0.0108393  
## 2021-04-15-2020-12-05 -0.174109561 -0.4635869344 0.115367812 0.7656520  
## 2021-01-28-2021-01-22 -0.324647671 -0.6369175459 -0.012377797 0.0325259  
## 2021-02-05-2021-01-22 0.144435027 -0.1678348479 0.456704901 0.9626127  
## 2021-02-12-2021-01-22 -0.073265555 -0.3737787736 0.227247664 0.9999573  
## 2021-02-26-2021-01-22 -0.023899689 -0.3261495367 0.278350158 1.0000000  
## 2021-03-15-2021-01-22 -0.304516513 -0.6050297320 -0.004003295 0.0433911  
## 2021-03-30-2021-01-22 -0.182079394 -0.4825926130 0.118433824 0.7559839  
## 2021-04-15-2021-01-22 -0.028366726 -0.3288799444 0.272146493 1.0000000  
## 2021-02-05-2021-01-28 0.469082698 0.1591519567 0.779013439 0.0000379  
## 2021-02-12-2021-01-28 0.251382117 -0.0466997255 0.549463959 0.2114319  
## 2021-02-26-2021-01-28 0.300747982 0.0009154286 0.600580536 0.0484136  
## 2021-03-15-2021-01-28 0.020131158 -0.2779506838 0.318213000 1.0000000  
## 2021-03-30-2021-01-28 0.142568277 -0.1555135649 0.440650119 0.9508507  
## 2021-04-15-2021-01-28 0.296280946 -0.0018008962 0.594362788 0.0532707  
## 2021-02-12-2021-02-05 -0.217700581 -0.5157824235 0.080381261 0.4487378  
## 2021-02-26-2021-02-05 -0.168334716 -0.4681672695 0.131497838 0.8443745  
## 2021-03-15-2021-02-05 -0.448951540 -0.7470333819 -0.150869698 0.0000429  
## 2021-03-30-2021-02-05 -0.326514421 -0.6245962629 -0.028432579 0.0170647  
## 2021-04-15-2021-02-05 -0.172801752 -0.4708835943 0.125280090 0.8104515  
## 2021-02-26-2021-02-12 0.049365866 -0.2382020053 0.336933737 0.9999995  
## 2021-03-15-2021-02-12 -0.231250958 -0.5169929832 0.054491066 0.2724914  
## 2021-03-30-2021-02-12 -0.108813839 -0.3945558642 0.176928185 0.9936968  
## 2021-04-15-2021-02-12 0.044898829 -0.2408431956 0.330640854 0.9999998  
## 2021-03-15-2021-02-26 -0.280616824 -0.5681846951 0.006951047 0.0641994  
## 2021-03-30-2021-02-26 -0.158179705 -0.4457475761 0.129388166 0.8636045  
## 2021-04-15-2021-02-26 -0.004467036 -0.2920349074 0.283100835 1.0000000  
## 2021-03-30-2021-03-15 0.122437119 -0.1633049058 0.408179144 0.9807294  
## 2021-04-15-2021-03-15 0.276149788 -0.0095922372 0.561891812 0.0705697  
## 2021-04-15-2021-03-30 0.153712669 -0.1320293561 0.439454693 0.8824697  
##   
## $`Condicion:Fechas`  
## diff lwr upr p adj  
## IA:2020-10-05-C:2020-10-05 -0.0080705706 -0.8244619355 0.808320794 1.0000000  
## C:2020-10-14-C:2020-10-05 0.1362344487 -0.6504599550 0.922928852 1.0000000  
## IA:2020-10-14-C:2020-10-05 0.0897415272 -0.6969528765 0.876435931 1.0000000  
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## C:2021-04-15-IA:2020-11-05 0.5926148850 0.0618177913 1.123411979 0.0102210  
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## IA:2020-11-14-C:2020-11-14 0.1546807747 -0.4113847882 0.720746338 0.9999999  
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## C:2021-01-28-C:2020-11-14 0.1729429556 -0.3360192601 0.681905171 0.9999896  
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## C:2021-02-05-C:2020-11-14 0.7055429517 0.1845599900 1.226525913 0.0001950  
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## C:2021-02-12-C:2020-11-14 0.2769637830 -0.2268027655 0.780730332 0.9643181  
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## C:2021-03-15-C:2021-02-05 -0.6229739574 -1.0894404291 -0.156507486 0.0002746  
## IA:2021-03-15-C:2021-02-05 -0.3918477163 -0.8583141880 0.074618755 0.2719660  
## C:2021-03-30-C:2021-02-05 -0.4227087725 -0.8891752442 0.043757699 0.1457532  
## IA:2021-03-30-C:2021-02-05 -0.3472386633 -0.8137051350 0.119227808 0.5388002  
## C:2021-04-15-C:2021-02-05 -0.1219607007 -0.5884271724 0.344505771 1.0000000  
## IA:2021-04-15-C:2021-02-05 -0.3405613978 -0.8070278695 0.125905074 0.5829433  
## C:2021-02-12-IA:2021-02-05 -0.3116605746 -0.7781270463 0.154805897 0.7632348  
## IA:2021-02-12-IA:2021-02-05 -0.0068219942 -0.4732884659 0.459644478 1.0000000  
## C:2021-02-26-IA:2021-02-05 -0.1579425181 -0.6300153628 0.314130327 0.9999925  
## IA:2021-02-26-IA:2021-02-05 -0.0615594371 -0.5280259088 0.404907035 1.0000000  
## C:2021-03-15-IA:2021-02-05 -0.5060553633 -0.9725218350 -0.039588892 0.0161325  
## IA:2021-03-15-IA:2021-02-05 -0.2749291223 -0.7413955940 0.191537349 0.9222873  
## C:2021-03-30-IA:2021-02-05 -0.3057901784 -0.7722566501 0.160676293 0.7951882  
## IA:2021-03-30-IA:2021-02-05 -0.2303200692 -0.6967865409 0.236146402 0.9913836  
## C:2021-04-15-IA:2021-02-05 -0.0050421066 -0.4715085783 0.461424365 1.0000000  
## IA:2021-04-15-IA:2021-02-05 -0.2236428037 -0.6901092754 0.242823668 0.9944125  
## IA:2021-02-12-C:2021-02-12 0.3048385805 -0.1423173858 0.751994547 0.7264589  
## C:2021-02-26-C:2021-02-12 0.1537180566 -0.2992833339 0.606719447 0.9999899  
## IA:2021-02-26-C:2021-02-12 0.2501011375 -0.1970548288 0.697257104 0.9562943  
## C:2021-03-15-C:2021-02-12 -0.1943947887 -0.6415507550 0.252761178 0.9988366  
## IA:2021-03-15-C:2021-02-12 0.0367314524 -0.4104245139 0.483887419 1.0000000  
## C:2021-03-30-C:2021-02-12 0.0058703962 -0.4412855701 0.453026363 1.0000000  
## IA:2021-03-30-C:2021-02-12 0.0813405054 -0.3658154609 0.528496472 1.0000000  
## C:2021-04-15-C:2021-02-12 0.3066184680 -0.1405374983 0.753774434 0.7153037  
## IA:2021-04-15-C:2021-02-12 0.0880177709 -0.3591381954 0.535173737 1.0000000  
## C:2021-02-26-IA:2021-02-12 -0.1511205239 -0.6041219143 0.301880867 0.9999929  
## IA:2021-02-26-IA:2021-02-12 -0.0547374429 -0.5018934092 0.392418523 1.0000000  
## C:2021-03-15-IA:2021-02-12 -0.4992333691 -0.9463893355 -0.052077403 0.0102208  
## IA:2021-03-15-IA:2021-02-12 -0.2681071281 -0.7152630944 0.179048838 0.9074782  
## C:2021-03-30-IA:2021-02-12 -0.2989681843 -0.7461241506 0.148187782 0.7620043  
## IA:2021-03-30-IA:2021-02-12 -0.2234980750 -0.6706540413 0.223657891 0.9897426  
## C:2021-04-15-IA:2021-02-12 0.0017798875 -0.4453760788 0.448935854 1.0000000  
## IA:2021-04-15-IA:2021-02-12 -0.2168208095 -0.6639767758 0.230335157 0.9933868  
## IA:2021-02-26-C:2021-02-26 0.0963830810 -0.3566183094 0.549384471 1.0000000  
## C:2021-03-15-C:2021-02-26 -0.3481128452 -0.8011142357 0.104888545 0.4654297  
## IA:2021-03-15-C:2021-02-26 -0.1169866042 -0.5699879946 0.336014786 1.0000000  
## C:2021-03-30-C:2021-02-26 -0.1478476603 -0.6008490508 0.305153730 0.9999956  
## IA:2021-03-30-C:2021-02-26 -0.0723775511 -0.5253789415 0.380623839 1.0000000  
## C:2021-04-15-C:2021-02-26 0.1529004114 -0.3001009790 0.605901802 0.9999909  
## IA:2021-04-15-C:2021-02-26 -0.0657002856 -0.5187016760 0.387301105 1.0000000  
## C:2021-03-15-IA:2021-02-26 -0.4444959262 -0.8916518925 0.002660040 0.0538274  
## IA:2021-03-15-IA:2021-02-26 -0.2133696852 -0.6605256515 0.233786281 0.9947985  
## C:2021-03-30-IA:2021-02-26 -0.2442307413 -0.6913867076 0.202925225 0.9670393  
## IA:2021-03-30-IA:2021-02-26 -0.1687606321 -0.6159165984 0.278395334 0.9999122  
## C:2021-04-15-IA:2021-02-26 0.0565173305 -0.3906386359 0.503673297 1.0000000  
## IA:2021-04-15-IA:2021-02-26 -0.1620833666 -0.6092393329 0.285072600 0.9999605  
## IA:2021-03-15-C:2021-03-15 0.2311262411 -0.2160297252 0.678282207 0.9837135  
## C:2021-03-30-C:2021-03-15 0.2002651849 -0.2468907814 0.647421151 0.9980873  
## IA:2021-03-30-C:2021-03-15 0.2757352941 -0.1714206722 0.722891260 0.8787718  
## C:2021-04-15-C:2021-03-15 0.5010132567 0.0538572904 0.948169223 0.0096373  
## IA:2021-04-15-C:2021-03-15 0.2824125596 -0.1647434067 0.729568526 0.8495912  
## C:2021-03-30-IA:2021-03-15 -0.0308610562 -0.4780170225 0.416294910 1.0000000  
## IA:2021-03-30-IA:2021-03-15 0.0446090530 -0.4025469133 0.491765019 1.0000000  
## C:2021-04-15-IA:2021-03-15 0.2698870156 -0.1772689507 0.717042982 0.9012230  
## IA:2021-04-15-IA:2021-03-15 0.0512863186 -0.3958696478 0.498442285 1.0000000  
## IA:2021-03-30-C:2021-03-30 0.0754701092 -0.3716858571 0.522626076 1.0000000  
## C:2021-04-15-C:2021-03-30 0.3007480718 -0.1464078945 0.747904038 0.7514419  
## IA:2021-04-15-C:2021-03-30 0.0821473747 -0.3650085916 0.529303341 1.0000000  
## C:2021-04-15-IA:2021-03-30 0.2252779626 -0.2218780037 0.672433929 0.9885326  
## IA:2021-04-15-IA:2021-03-30 0.0066772655 -0.4404787008 0.453833232 1.0000000  
## IA:2021-04-15-C:2021-04-15 -0.2186006971 -0.6657566634 0.228555269 0.9925418

Efecto de la IA sobre los niveles de cloro plasmático

t2way(Cloro ~ Condicion + Fechas + Condicion:Fechas, data = b,)

## Call:  
## t2way(formula = Cloro ~ Condicion + Fechas + Condicion:Fechas,   
## data = b)  
##   
## value p.value  
## Condicion 0.6261 0.433  
## Fechas 511.0321 0.001  
## Condicion:Fechas 69.5673 0.001

anovacloro <- aov(Cloro ~ Condicion + Fechas + Condicion:Fechas, data = b)  
anova(anovacloro)

## Analysis of Variance Table  
##   
## Response: Cloro  
## Df Sum Sq Mean Sq F value Pr(>F)   
## Condicion 1 42 41.7 0.2033 0.652321   
## Fechas 14 59843 4274.5 20.8621 < 2.2e-16 \*\*\*  
## Condicion:Fechas 14 7442 531.6 2.5943 0.001312 \*\*   
## Residuals 423 86670 204.9   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

TukeyHSD(anovacloro)

## Tukey multiple comparisons of means  
## 95% family-wise confidence level  
##   
## Fit: aov(formula = Cloro ~ Condicion + Fechas + Condicion:Fechas, data = b)  
##   
## $Condicion  
## diff lwr upr p adj  
## IA-C 0.6067736 -2.038535 3.252082 0.6523206  
##   
## $Fechas  
## diff lwr upr p adj  
## 2020-10-14-2020-10-05 5.4368885 -13.77430273 24.6480796 0.9997474  
## 2020-10-26-2020-10-05 13.6377637 -5.57342750 32.8489549 0.4999481  
## 2020-11-05-2020-10-05 2.4112702 -15.11379954 19.9363400 1.0000000  
## 2020-11-14-2020-10-05 0.5006070 -16.64932868 17.6505427 1.0000000  
## 2020-11-25-2020-10-05 1.1952530 -15.65407630 18.0445823 1.0000000  
## 2020-12-05-2020-10-05 -11.2892537 -27.45980555 4.8812982 0.5298485  
## 2021-01-22-2020-10-05 -12.1677596 -28.62969615 4.2941770 0.4271742  
## 2021-01-28-2020-10-05 -8.1183687 -24.51562158 8.2788842 0.9355558  
## 2021-02-05-2020-10-05 -18.9034730 -35.30072591 -2.5062201 0.0083779  
## 2021-02-12-2020-10-05 -30.6135566 -46.68679232 -14.5403209 0.0000000  
## 2021-02-26-2020-10-05 -13.4063843 -29.52710386 2.7143352 0.2313042  
## 2021-03-15-2020-10-05 -2.3283424 -18.40157813 13.7448933 0.9999999  
## 2021-03-30-2020-10-05 11.8514669 -4.22176883 27.9247026 0.4315609  
## 2021-04-15-2020-10-05 -2.9347881 -19.00802383 13.1384476 0.9999989  
## 2020-10-26-2020-10-14 8.2008752 -10.25664023 26.6583907 0.9734411  
## 2020-11-05-2020-10-14 -3.0256182 -19.72106913 13.6698327 0.9999990  
## 2020-11-14-2020-10-14 -4.9362815 -21.23751773 11.3649548 0.9994513  
## 2020-11-25-2020-10-14 -4.2416355 -20.22631274 11.7430418 0.9998815  
## 2020-12-05-2020-10-14 -16.7261421 -31.99364874 -1.4586355 0.0170334  
## 2021-01-22-2020-10-14 -17.6046480 -33.18044226 -2.0288537 0.0111419  
## 2021-01-28-2020-10-14 -13.5552571 -29.06267190 1.9521576 0.1648861  
## 2021-02-05-2020-10-14 -24.3403615 -39.84777624 -8.8329467 0.0000144  
## 2021-02-12-2020-10-14 -36.0504451 -51.21484141 -20.8860487 0.0000000  
## 2021-02-26-2020-10-14 -18.8432728 -34.05798963 -3.6285559 0.0026731  
## 2021-03-15-2020-10-14 -7.7652309 -22.92962722 7.3991655 0.9170365  
## 2021-03-30-2020-10-14 6.4145784 -8.74981792 21.5789748 0.9828518  
## 2021-04-15-2020-10-14 -8.3716766 -23.53607292 6.7927198 0.8603266  
## 2020-11-05-2020-10-26 -11.2264934 -27.92194435 5.4689575 0.5955553  
## 2020-11-14-2020-10-26 -13.1371567 -29.43839295 3.1640796 0.2791371  
## 2020-11-25-2020-10-26 -12.4425107 -28.42718796 3.5421666 0.3363054  
## 2020-12-05-2020-10-26 -24.9270174 -40.19452397 -9.6595108 0.0000047  
## 2021-01-22-2020-10-26 -25.8055232 -41.38131749 -10.2297290 0.0000030  
## 2021-01-28-2020-10-26 -21.7561323 -37.26354712 -6.2487176 0.0002320  
## 2021-02-05-2020-10-26 -32.5412367 -48.04865146 -17.0338219 0.0000000  
## 2021-02-12-2020-10-26 -44.2513203 -59.41571663 -29.0869239 0.0000000  
## 2021-02-26-2020-10-26 -27.0441480 -42.25886485 -11.8294312 0.0000003  
## 2021-03-15-2020-10-26 -15.9661061 -31.13050244 -0.8017097 0.0280262  
## 2021-03-30-2020-10-26 -1.7862968 -16.95069314 13.3780996 1.0000000  
## 2021-04-15-2020-10-26 -16.5725518 -31.73694814 -1.4081554 0.0175881  
## 2020-11-14-2020-11-05 -1.9106632 -16.18611448 12.3647880 1.0000000  
## 2020-11-25-2020-11-05 -1.2160172 -15.12889300 12.6968585 1.0000000  
## 2020-12-05-2020-11-05 -13.7005239 -26.78314454 -0.6179033 0.0298715  
## 2021-01-22-2020-11-05 -14.5790298 -28.02014473 -1.1379148 0.0193881  
## 2021-01-28-2020-11-05 -10.5296389 -23.89145455 2.8321767 0.3155949  
## 2021-02-05-2020-11-05 -21.3147432 -34.67655888 -7.9529276 0.0000092  
## 2021-02-12-2020-11-05 -33.0248268 -45.98696867 -20.0626850 0.0000000  
## 2021-02-26-2020-11-05 -15.8176546 -28.83863044 -2.7966787 0.0037021  
## 2021-03-15-2020-11-05 -4.7396126 -17.70175448 8.2225292 0.9958120  
## 2021-03-30-2020-11-05 9.4401967 -3.52194519 22.4023385 0.4538014  
## 2021-04-15-2020-11-05 -5.3460583 -18.30820018 7.6160835 0.9864168  
## 2020-11-25-2020-11-14 0.6946460 -12.74262809 14.1319201 1.0000000  
## 2020-12-05-2020-11-14 -11.7898607 -24.36551911 0.7857977 0.0935433  
## 2021-01-22-2020-11-14 -12.6683665 -25.61656310 0.2798300 0.0625500  
## 2021-01-28-2020-11-14 -8.6189757 -21.48483515 4.2468838 0.6019609  
## 2021-02-05-2020-11-14 -19.4040800 -32.26993948 -6.5382205 0.0000415  
## 2021-02-12-2020-11-14 -31.1141636 -43.56443845 -18.6638887 0.0000000  
## 2021-02-26-2020-11-14 -13.9069913 -26.41850745 -1.3954752 0.0140372  
## 2021-03-15-2020-11-14 -2.8289494 -15.27922425 9.6213255 0.9999821  
## 2021-03-30-2020-11-14 11.3508599 -1.09941496 23.8011347 0.1188561  
## 2021-04-15-2020-11-14 -3.4353951 -15.88566996 9.0148798 0.9998120  
## 2020-12-05-2020-11-25 -12.4845067 -24.64702240 -0.3219910 0.0376205  
## 2021-01-22-2020-11-25 -13.3630125 -25.91033885 -0.8156862 0.0243902  
## 2021-01-28-2020-11-25 -9.3136217 -21.77596269 3.1487194 0.4074425  
## 2021-02-05-2020-11-25 -20.0987260 -32.56106702 -7.6363850 0.0000067  
## 2021-02-12-2020-11-25 -31.8088096 -43.84163750 -19.7759817 0.0000000  
## 2021-02-26-2020-11-25 -14.6016373 -26.69782016 -2.5054545 0.0041063  
## 2021-03-15-2020-11-25 -3.5235954 -15.55642331 8.5092325 0.9996254  
## 2021-03-30-2020-11-25 10.6562139 -1.37661402 22.6890418 0.1496028  
## 2021-04-15-2020-11-25 -4.1300411 -16.16286901 7.9027868 0.9978324  
## 2021-01-22-2020-12-05 -0.8785059 -12.49841325 10.7414015 1.0000000  
## 2021-01-28-2020-12-05 3.1708850 -8.35720216 14.6989722 0.9998189  
## 2021-02-05-2020-12-05 -7.6142193 -19.14230650 3.9138679 0.6257982  
## 2021-02-12-2020-12-05 -19.3243029 -30.38666241 -8.2619434 0.0000006  
## 2021-02-26-2020-12-05 -2.1171306 -13.24837000 9.0141087 0.9999981  
## 2021-03-15-2020-12-05 8.9609113 -2.10144822 20.0232708 0.2710650  
## 2021-03-30-2020-12-05 23.1407206 12.07836107 34.2030801 0.0000000  
## 2021-04-15-2020-12-05 8.3544656 -2.70789393 19.4168251 0.3888313  
## 2021-01-28-2021-01-22 4.0493909 -7.88398262 15.9827644 0.9980805  
## 2021-02-05-2021-01-22 -6.7357135 -18.66908695 5.1976600 0.8390320  
## 2021-02-12-2021-01-22 -18.4457970 -29.92989069 -6.9617034 0.0000075  
## 2021-02-26-2021-01-22 -1.2386248 -12.78908358 10.3118340 1.0000000  
## 2021-03-15-2021-01-22 9.8394171 -1.64467650 21.3235108 0.1900768  
## 2021-03-30-2021-01-22 24.0192264 12.53513279 35.5033201 0.0000000  
## 2021-04-15-2021-01-22 9.2329714 -2.25112220 20.7170651 0.2829326  
## 2021-02-05-2021-01-28 -10.7851043 -22.62908801 1.0588793 0.1200414  
## 2021-02-12-2021-01-28 -22.4951879 -33.88636666 -11.1040092 0.0000000  
## 2021-02-26-2021-01-28 -5.2880157 -16.74609773 6.1700664 0.9632963  
## 2021-03-15-2021-01-28 5.7900263 -5.60115247 17.1812050 0.9214410  
## 2021-03-30-2021-01-28 19.9698356 8.57865682 31.3610143 0.0000005  
## 2021-04-15-2021-01-28 5.1835806 -6.20759818 16.5747593 0.9673981  
## 2021-02-12-2021-02-05 -11.7100836 -23.10126233 -0.3189049 0.0369981  
## 2021-02-26-2021-02-05 5.4970887 -5.96099340 16.9551708 0.9496296  
## 2021-03-15-2021-02-05 16.5751306 5.18395186 27.9663093 0.0001003  
## 2021-03-30-2021-02-05 30.7549399 19.36376115 42.1461186 0.0000000  
## 2021-04-15-2021-02-05 15.9686849 4.57750616 27.3598636 0.0002361  
## 2021-02-26-2021-02-12 17.2071723 6.21778427 28.1965603 0.0000154  
## 2021-03-15-2021-02-12 28.2852142 17.36560079 39.2048276 0.0000000  
## 2021-03-30-2021-02-12 42.4650235 31.54541008 53.3846369 0.0000000  
## 2021-04-15-2021-02-12 27.6787685 16.75915508 38.5983819 0.0000000  
## 2021-03-15-2021-02-26 11.0780419 0.08865392 22.0674299 0.0459019  
## 2021-03-30-2021-02-26 25.2578512 14.26846322 36.2472392 0.0000000  
## 2021-04-15-2021-02-26 10.4715962 -0.51779178 21.4609842 0.0806729  
## 2021-03-30-2021-03-15 14.1798093 3.26019589 25.0994227 0.0011355  
## 2021-04-15-2021-03-15 -0.6064457 -11.52605911 10.3131677 1.0000000  
## 2021-04-15-2021-03-30 -14.7862550 -25.70586840 -3.8666416 0.0004954  
##   
## $`Condicion:Fechas`  
## diff lwr upr p adj  
## IA:2020-10-05-C:2020-10-05 3.78767123 -27.4106731 34.98601560 1.0000000  
## C:2020-10-14-C:2020-10-05 1.99706458 -28.0664123 32.06054146 1.0000000  
## IA:2020-10-14-C:2020-10-05 12.66438356 -17.3990933 42.72786044 0.9993253  
## C:2020-10-26-C:2020-10-05 18.95205479 -10.2313241 48.13543371 0.8099508  
## IA:2020-10-26-C:2020-10-05 10.86986301 -20.3284814 42.06820738 0.9999824  
## C:2020-11-05-C:2020-10-05 9.05168120 -18.3731945 36.47655689 0.9999944  
## IA:2020-11-05-C:2020-10-05 -0.44146949 -27.8663452 26.98340621 1.0000000  
## C:2020-11-14-C:2020-10-05 3.75605901 -22.9138586 30.42597662 1.0000000  
## IA:2020-11-14-C:2020-10-05 0.89407594 -26.1244828 27.91263472 1.0000000  
## C:2020-11-25-C:2020-10-05 5.38085797 -20.7215497 31.48326560 1.0000000  
## IA:2020-11-25-C:2020-10-05 0.39806444 -26.2718532 27.06798205 1.0000000  
## C:2020-12-05-C:2020-10-05 -10.80532624 -35.9582356 14.34758312 0.9990512  
## IA:2020-12-05-C:2020-10-05 -7.86256309 -33.3359046 17.61077842 0.9999987  
## C:2021-01-22-C:2020-10-05 -21.13091489 -46.4361137 4.17428392 0.2837056  
## IA:2021-01-22-C:2020-10-05 4.35221135 -22.0152021 30.71962484 1.0000000  
## C:2021-01-28-C:2020-10-05 -7.44387888 -32.7490777 17.86131993 0.9999996  
## IA:2021-01-28-C:2020-10-05 -4.76093151 -30.8633391 21.34147612 1.0000000  
## C:2021-02-05-C:2020-10-05 -15.42257857 -41.0825405 10.23738332 0.9052249  
## IA:2021-02-05-C:2020-10-05 -18.59669621 -44.2566581 7.06326568 0.5993976  
## C:2021-02-12-C:2020-10-05 -30.85319466 -56.0061040 -5.70028530 0.0018195  
## IA:2021-02-12-C:2020-10-05 -26.58624730 -51.7391567 -1.43333793 0.0237651  
## C:2021-02-26-C:2020-10-05 -11.91969605 -37.2248949 13.38550275 0.9957308  
## IA:2021-02-26-C:2020-10-05 -11.11058940 -36.2634988 14.04231996 0.9984782  
## C:2021-03-15-C:2020-10-05 1.73911913 -23.4137902 26.89202849 1.0000000  
## IA:2021-03-15-C:2020-10-05 -2.60813271 -27.7610421 22.54477666 1.0000000  
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## IA:2021-03-15-C:2021-02-26 9.31156334 -7.9998561 26.62298283 0.9727113  
## C:2021-03-30-C:2021-02-26 27.09333383 9.7819143 44.40475331 0.0000030  
## IA:2021-03-30-C:2021-02-26 24.23666328 6.9252438 41.54808276 0.0000828  
## C:2021-04-15-C:2021-02-26 13.06765928 -4.2437602 30.37907876 0.5066811  
## IA:2021-04-15-C:2021-02-26 8.68982783 -8.6215916 26.00124732 0.9891029  
## C:2021-03-15-IA:2021-02-26 12.84970853 -4.2383284 29.93774550 0.5155241  
## IA:2021-03-15-IA:2021-02-26 8.50245670 -8.5855803 25.59049366 0.9903798  
## C:2021-03-30-IA:2021-02-26 26.28422718 9.1961902 43.37226415 0.0000053  
## IA:2021-03-30-IA:2021-02-26 23.42755663 6.3395197 40.51559360 0.0001430  
## C:2021-04-15-IA:2021-02-26 12.25855263 -4.8294843 29.34658960 0.6219003  
## IA:2021-04-15-IA:2021-02-26 7.88072119 -9.2073158 24.96875815 0.9969315  
## IA:2021-03-15-C:2021-03-15 -4.34725183 -21.4352888 12.74078514 1.0000000  
## C:2021-03-30-C:2021-03-15 13.43451865 -3.6535183 30.52255562 0.4131662  
## IA:2021-03-30-C:2021-03-15 10.57784810 -6.5101889 27.66588507 0.8743760  
## C:2021-04-15-C:2021-03-15 -0.59115590 -17.6791929 16.49688107 1.0000000  
## IA:2021-04-15-C:2021-03-15 -4.96898734 -22.0570243 12.11904963 0.9999997  
## C:2021-03-30-IA:2021-03-15 17.78177049 0.6937335 34.86980745 0.0296319  
## IA:2021-03-30-IA:2021-03-15 14.92509993 -2.1629370 32.01313690 0.2014152  
## C:2021-04-15-IA:2021-03-15 3.75609594 -13.3319410 20.84413290 1.0000000  
## IA:2021-04-15-IA:2021-03-15 -0.62173551 -17.7097725 16.46630146 1.0000000  
## IA:2021-03-30-C:2021-03-30 -2.85667055 -19.9447075 14.23136642 1.0000000  
## C:2021-04-15-C:2021-03-30 -14.02567455 -31.1137115 3.06236242 0.3188565  
## IA:2021-04-15-C:2021-03-30 -18.40350600 -35.4915430 -1.31546903 0.0180278  
## C:2021-04-15-IA:2021-03-30 -11.16900400 -28.2570410 5.91903297 0.7998944  
## IA:2021-04-15-IA:2021-03-30 -15.54683544 -32.6348724 1.54120153 0.1404085  
## IA:2021-04-15-C:2021-04-15 -4.37783145 -21.4658684 12.71020552 1.0000000

Efecto de la IA sobre los niveles de albumina plasmática

t2way(Albumina ~ Condicion + Fechas + Condicion:Fechas, data = b,)

## Call:  
## t2way(formula = Albumina ~ Condicion + Fechas + Condicion:Fechas,   
## data = b)  
##   
## value p.value  
## Condicion 14.6664 0.001  
## Fechas 385.2984 0.001  
## Condicion:Fechas 24.2829 0.116

anovaalbumina <- aov(Albumina ~ Condicion + Fechas + Condicion:Fechas, data = b)  
anova(anovaalbumina)

## Analysis of Variance Table  
##   
## Response: Albumina  
## Df Sum Sq Mean Sq F value Pr(>F)   
## Condicion 1 0.5364 0.53637 17.7663 3.056e-05 \*\*\*  
## Fechas 14 11.3501 0.81072 26.8537 < 2.2e-16 \*\*\*  
## Condicion:Fechas 14 0.5598 0.03998 1.3244 0.1891   
## Residuals 423 12.7705 0.03019   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

TukeyHSD(anovaalbumina)

## Tukey multiple comparisons of means  
## 95% family-wise confidence level  
##   
## Fit: aov(formula = Albumina ~ Condicion + Fechas + Condicion:Fechas, data = b)  
##   
## $Condicion  
## diff lwr upr p adj  
## IA-C 0.06885764 0.03674726 0.100968 3.06e-05  
##   
## $Fechas  
## diff lwr upr p adj  
## 2020-10-14-2020-10-05 0.001357312 -0.231839984 0.234554608 1.0000000  
## 2020-10-26-2020-10-05 0.111637048 -0.121560248 0.344834344 0.9504894  
## 2020-11-05-2020-10-05 0.189061764 -0.023668350 0.401791877 0.1456076  
## 2020-11-14-2020-10-05 0.360628635 0.152452131 0.568805139 0.0000007  
## 2020-11-25-2020-10-05 0.458048312 0.253520754 0.662575870 0.0000000  
## 2020-12-05-2020-10-05 0.455188260 0.258900121 0.651476399 0.0000000  
## 2021-01-22-2020-10-05 0.492422043 0.292596897 0.692247190 0.0000000  
## 2021-01-28-2020-10-05 0.488483123 0.289443147 0.687523100 0.0000000  
## 2021-02-05-2020-10-05 0.532590591 0.333550615 0.731630567 0.0000000  
## 2021-02-12-2020-10-05 0.572184865 0.377078009 0.767291720 0.0000000  
## 2021-02-26-2020-10-05 0.469026137 0.273342893 0.664709380 0.0000000  
## 2021-03-15-2020-10-05 0.287739709 0.092632853 0.482846564 0.0000726  
## 2021-03-30-2020-10-05 0.216770948 0.021664092 0.411877803 0.0141228  
## 2021-04-15-2020-10-05 0.509242919 0.314136063 0.704349774 0.0000000  
## 2020-10-26-2020-10-14 0.110279736 -0.113768978 0.334328451 0.9383975  
## 2020-11-05-2020-10-14 0.187704452 -0.014955236 0.390364139 0.1040383  
## 2020-11-14-2020-10-14 0.359271323 0.161396856 0.557145790 0.0000001  
## 2020-11-25-2020-10-14 0.456691000 0.262659122 0.650722879 0.0000000  
## 2020-12-05-2020-10-14 0.453830948 0.268504530 0.639157367 0.0000000  
## 2021-01-22-2020-10-14 0.491064731 0.301996127 0.680133336 0.0000000  
## 2021-01-28-2020-10-14 0.487125812 0.298887240 0.675364383 0.0000000  
## 2021-02-05-2020-10-14 0.531233279 0.342994707 0.719471851 0.0000000  
## 2021-02-12-2020-10-14 0.570827553 0.386752750 0.754902355 0.0000000  
## 2021-02-26-2020-10-14 0.467668825 0.282983201 0.652354448 0.0000000  
## 2021-03-15-2020-10-14 0.286382397 0.102307594 0.470457199 0.0000183  
## 2021-03-30-2020-10-14 0.215413636 0.031338833 0.399488438 0.0066937  
## 2021-04-15-2020-10-14 0.507885607 0.323810805 0.691960409 0.0000000  
## 2020-11-05-2020-10-26 0.077424716 -0.125234972 0.280084403 0.9934919  
## 2020-11-14-2020-10-26 0.248991587 0.051117120 0.446866054 0.0020245  
## 2020-11-25-2020-10-26 0.346411264 0.152379386 0.540443143 0.0000003  
## 2020-12-05-2020-10-26 0.343551212 0.158224794 0.528877630 0.0000001  
## 2021-01-22-2020-10-26 0.380784995 0.191716391 0.569853599 0.0000000  
## 2021-01-28-2020-10-26 0.376846075 0.188607504 0.565084647 0.0000000  
## 2021-02-05-2020-10-26 0.420953543 0.232714971 0.609192114 0.0000000  
## 2021-02-12-2020-10-26 0.460547817 0.276473014 0.644622619 0.0000000  
## 2021-02-26-2020-10-26 0.357389089 0.172703465 0.542074712 0.0000000  
## 2021-03-15-2020-10-26 0.176102661 -0.007972142 0.360177463 0.0777193  
## 2021-03-30-2020-10-26 0.105133900 -0.078940903 0.289208702 0.8267909  
## 2021-04-15-2020-10-26 0.397605871 0.213531068 0.581680673 0.0000000  
## 2020-11-14-2020-11-05 0.171566871 -0.001717367 0.344851109 0.0554597  
## 2020-11-25-2020-11-05 0.268986548 0.100103475 0.437869621 0.0000096  
## 2020-12-05-2020-11-05 0.266126497 0.107321573 0.424931420 0.0000021  
## 2021-01-22-2020-11-05 0.303360280 0.140203730 0.466516829 0.0000001  
## 2021-01-28-2020-11-05 0.299421360 0.137227394 0.461615325 0.0000001  
## 2021-02-05-2020-11-05 0.343528827 0.181334862 0.505722792 0.0000000  
## 2021-02-12-2020-11-05 0.383123101 0.225780623 0.540465579 0.0000000  
## 2021-02-26-2020-11-05 0.279964373 0.121907731 0.438021015 0.0000003  
## 2021-03-15-2020-11-05 0.098677945 -0.058664533 0.256020423 0.7074448  
## 2021-03-30-2020-11-05 0.027709184 -0.129633294 0.185051662 0.9999993  
## 2021-04-15-2020-11-05 0.320181155 0.162838677 0.477523633 0.0000000  
## 2020-11-25-2020-11-14 0.097419677 -0.065690249 0.260529603 0.7746472  
## 2020-12-05-2020-11-14 0.094559625 -0.058091478 0.247210729 0.7254238  
## 2021-01-22-2020-11-14 0.131793408 -0.025379793 0.288966610 0.2194494  
## 2021-01-28-2020-11-14 0.127854488 -0.028319255 0.284028232 0.2546862  
## 2021-02-05-2020-11-14 0.171961956 0.015788213 0.328135699 0.0159331  
## 2021-02-12-2020-11-14 0.211556230 0.060427109 0.362685350 0.0002437  
## 2021-02-26-2020-11-14 0.108397502 -0.043475003 0.260270006 0.4902016  
## 2021-03-15-2020-11-14 -0.072888926 -0.224018047 0.078240194 0.9474700  
## 2021-03-30-2020-11-14 -0.143857687 -0.294986808 0.007271433 0.0814609  
## 2021-04-15-2020-11-14 0.148614284 -0.002514837 0.299743404 0.0594493  
## 2020-12-05-2020-11-25 -0.002860052 -0.150496174 0.144776071 1.0000000  
## 2021-01-22-2020-11-25 0.034373731 -0.117933460 0.186680922 0.9999835  
## 2021-01-28-2020-11-25 0.030434811 -0.120840776 0.181710398 0.9999961  
## 2021-02-05-2020-11-25 0.074542279 -0.076733308 0.225817866 0.9378690  
## 2021-02-12-2020-11-25 0.114136553 -0.031925339 0.260198444 0.3297325  
## 2021-02-26-2020-11-25 0.010977824 -0.135853109 0.157808758 1.0000000  
## 2021-03-15-2020-11-25 -0.170308604 -0.316370495 -0.024246712 0.0070732  
## 2021-03-30-2020-11-25 -0.241277364 -0.387339256 -0.095215473 0.0000033  
## 2021-04-15-2020-11-25 0.051194607 -0.094867285 0.197256498 0.9972965  
## 2021-01-22-2020-12-05 0.037233783 -0.103815825 0.178283391 0.9998886  
## 2021-01-28-2020-12-05 0.033294863 -0.106640174 0.173229900 0.9999683  
## 2021-02-05-2020-12-05 0.077402331 -0.062532707 0.217337368 0.8585563  
## 2021-02-12-2020-12-05 0.116996604 -0.017285143 0.251278352 0.1688348  
## 2021-02-26-2020-12-05 0.013837876 -0.121279977 0.148955730 1.0000000  
## 2021-03-15-2020-12-05 -0.167448552 -0.301730299 -0.033166804 0.0023743  
## 2021-03-30-2020-12-05 -0.238417313 -0.372699060 -0.104135565 0.0000003  
## 2021-04-15-2020-12-05 0.054054658 -0.080227089 0.188336406 0.9891908  
## 2021-01-28-2021-01-22 -0.003938920 -0.148793573 0.140915733 1.0000000  
## 2021-02-05-2021-01-22 0.040168548 -0.104686105 0.185023200 0.9998008  
## 2021-02-12-2021-01-22 0.079762821 -0.059638195 0.219163838 0.8248581  
## 2021-02-26-2021-01-22 -0.023395907 -0.163602505 0.116810691 0.9999997  
## 2021-03-15-2021-01-22 -0.204682335 -0.344083351 -0.065281318 0.0000808  
## 2021-03-30-2021-01-22 -0.275651096 -0.415052112 -0.136250079 0.0000000  
## 2021-04-15-2021-01-22 0.016820875 -0.122580141 0.156221892 1.0000000  
## 2021-02-05-2021-01-28 0.044107467 -0.099662116 0.187877051 0.9993644  
## 2021-02-12-2021-01-28 0.083701741 -0.054571417 0.221974899 0.7572116  
## 2021-02-26-2021-01-28 -0.019456987 -0.158542259 0.119628285 1.0000000  
## 2021-03-15-2021-01-28 -0.200743415 -0.339016573 -0.062470257 0.0001059  
## 2021-03-30-2021-01-28 -0.271712176 -0.409985334 -0.133439017 0.0000000  
## 2021-04-15-2021-01-28 0.020759795 -0.117513363 0.159032954 0.9999999  
## 2021-02-12-2021-02-05 0.039594274 -0.098678884 0.177867432 0.9997105  
## 2021-02-26-2021-02-05 -0.063564454 -0.202649726 0.075520818 0.9661880  
## 2021-03-15-2021-02-05 -0.244850882 -0.383124040 -0.106577724 0.0000003  
## 2021-03-30-2021-02-05 -0.315819643 -0.454092801 -0.177546485 0.0000000  
## 2021-04-15-2021-02-05 -0.023347672 -0.161620830 0.114925486 0.9999996  
## 2021-02-26-2021-02-12 -0.103158728 -0.236554702 0.030237246 0.3474882  
## 2021-03-15-2021-02-12 -0.284445156 -0.416994163 -0.151896149 0.0000000  
## 2021-03-30-2021-02-12 -0.355413917 -0.487962924 -0.222864910 0.0000000  
## 2021-04-15-2021-02-12 -0.062941946 -0.195490953 0.069607061 0.9536132  
## 2021-03-15-2021-02-26 -0.181286428 -0.314682402 -0.047890454 0.0004596  
## 2021-03-30-2021-02-26 -0.252255189 -0.385651163 -0.118859215 0.0000000  
## 2021-04-15-2021-02-26 0.040216782 -0.093179192 0.173612756 0.9994780  
## 2021-03-30-2021-03-15 -0.070968761 -0.203517768 0.061580246 0.8861885  
## 2021-04-15-2021-03-15 0.221503210 0.088954203 0.354052217 0.0000023  
## 2021-04-15-2021-03-30 0.292471971 0.159922964 0.425020978 0.0000000  
##   
## $`Condicion:Fechas`  
## diff lwr upr p adj  
## IA:2020-10-05-C:2020-10-05 0.017058942 -0.3616458173 0.395763702 1.0000000  
## C:2020-10-14-C:2020-10-05 -0.024030590 -0.3889596270 0.340898448 1.0000000  
## IA:2020-10-14-C:2020-10-05 0.043804155 -0.3211248820 0.408733193 1.0000000  
## C:2020-10-26-C:2020-10-05 0.048153723 -0.3060921422 0.402399588 1.0000000  
## IA:2020-10-26-C:2020-10-05 0.204707307 -0.1739974527 0.583412066 0.9709827  
## C:2020-11-05-C:2020-10-05 0.175771886 -0.1571281820 0.508671954 0.9784445  
## IA:2020-11-05-C:2020-10-05 0.219410584 -0.1134894839 0.552310652 0.7864132  
## C:2020-11-14-C:2020-10-05 0.336577747 0.0128418269 0.660313668 0.0300005  
## IA:2020-11-14-C:2020-10-05 0.401584426 0.0736164839 0.729552369 0.0018858  
## C:2020-11-25-C:2020-10-05 0.476500731 0.1596535967 0.793347865 0.0000107  
## IA:2020-11-25-C:2020-10-05 0.449831487 0.1260955660 0.773567407 0.0001011  
## C:2020-12-05-C:2020-10-05 0.375250990 0.0699294519 0.680572528 0.0017483  
## IA:2020-12-05-C:2020-10-05 0.558188686 0.2489775446 0.867399827 0.0000000  
## C:2021-01-22-C:2020-10-05 0.488910531 0.1817404099 0.796080653 0.0000017  
## IA:2021-01-22-C:2020-10-05 0.504996841 0.1849329021 0.825060780 0.0000023  
## C:2021-01-28-C:2020-10-05 0.459391677 0.1522215556 0.766561798 0.0000127  
## IA:2021-01-28-C:2020-10-05 0.535484737 0.2186376033 0.852331872 0.0000002  
## C:2021-02-05-C:2020-10-05 0.553480020 0.2420035654 0.864956475 0.0000000  
## IA:2021-02-05-C:2020-10-05 0.528760104 0.2172836492 0.840236559 0.0000002  
## C:2021-02-12-C:2020-10-05 0.582308231 0.2769866926 0.887629769 0.0000000  
## IA:2021-02-12-C:2020-10-05 0.579120441 0.2737989027 0.884441979 0.0000000  
## C:2021-02-26-C:2020-10-05 0.455451415 0.1482812938 0.762621537 0.0000165  
## IA:2021-02-26-C:2020-10-05 0.500276032 0.1949544936 0.805597570 0.0000006  
## C:2021-03-15-C:2020-10-05 0.199697852 -0.1056236867 0.505019390 0.7988213  
## IA:2021-03-15-C:2020-10-05 0.392840508 0.0875189698 0.698162046 0.0006554  
## C:2021-03-30-C:2020-10-05 0.170550192 -0.1347713467 0.475871730 0.9569464  
## IA:2021-03-30-C:2020-10-05 0.280050646 -0.0252708919 0.585372184 0.1299066  
## C:2021-04-15-C:2020-10-05 0.467856874 0.1625353355 0.773178412 0.0000060  
## IA:2021-04-15-C:2020-10-05 0.567687906 0.2623663679 0.873009444 0.0000000  
## C:2020-10-14-IA:2020-10-05 -0.041089532 -0.4060185693 0.323839506 1.0000000  
## IA:2020-10-14-IA:2020-10-05 0.026745213 -0.3381838243 0.391674251 1.0000000  
## C:2020-10-26-IA:2020-10-05 0.031094781 -0.3231510845 0.385340646 1.0000000  
## IA:2020-10-26-IA:2020-10-05 0.187648365 -0.1910563949 0.566353124 0.9909354  
## C:2020-11-05-IA:2020-10-05 0.158712944 -0.1741871242 0.491613011 0.9948661  
## IA:2020-11-05-IA:2020-10-05 0.202351642 -0.1305484261 0.535251710 0.8941942  
## C:2020-11-14-IA:2020-10-05 0.319518805 -0.0042171154 0.643254726 0.0587060  
## IA:2020-11-14-IA:2020-10-05 0.384525484 0.0565575417 0.712493426 0.0043598  
## C:2020-11-25-IA:2020-10-05 0.459441789 0.1425946545 0.776288923 0.0000315  
## IA:2020-11-25-IA:2020-10-05 0.432772544 0.1090366238 0.756508465 0.0002682  
## C:2020-12-05-IA:2020-10-05 0.358192048 0.0528705097 0.663513586 0.0043112  
## IA:2020-12-05-IA:2020-10-05 0.541129744 0.2319186024 0.850340885 0.0000001  
## C:2021-01-22-IA:2020-10-05 0.471851589 0.1646814677 0.779021711 0.0000055  
## IA:2021-01-22-IA:2020-10-05 0.487937899 0.1678739598 0.808001837 0.0000070  
## C:2021-01-28-IA:2020-10-05 0.442332735 0.1351626134 0.749502856 0.0000383  
## IA:2021-01-28-IA:2020-10-05 0.518425795 0.2015786611 0.835272929 0.0000007  
## C:2021-02-05-IA:2020-10-05 0.536421078 0.2249446231 0.847897533 0.0000001  
## IA:2021-02-05-IA:2020-10-05 0.511701162 0.2002247070 0.823177616 0.0000006  
## C:2021-02-12-IA:2020-10-05 0.565249289 0.2599277503 0.870570827 0.0000000  
## IA:2021-02-12-IA:2020-10-05 0.562061499 0.2567399604 0.867383037 0.0000000  
## C:2021-02-26-IA:2020-10-05 0.438392473 0.1312223515 0.745562594 0.0000492  
## IA:2021-02-26-IA:2020-10-05 0.483217090 0.1778955514 0.788538628 0.0000021  
## C:2021-03-15-IA:2020-10-05 0.182638909 -0.1226826289 0.487960447 0.9096110  
## IA:2021-03-15-IA:2020-10-05 0.375781566 0.0704600276 0.681103104 0.0016985  
## C:2021-03-30-IA:2020-10-05 0.153491249 -0.1518302889 0.458812787 0.9888724  
## IA:2021-03-30-IA:2020-10-05 0.262991704 -0.0423298342 0.568313242 0.2252844  
## C:2021-04-15-IA:2020-10-05 0.450797931 0.1454763933 0.756119470 0.0000187  
## IA:2021-04-15-IA:2020-10-05 0.550628964 0.2453074257 0.855950502 0.0000000  
## IA:2020-10-14-C:2020-10-14 0.067834745 -0.2827777333 0.418447223 1.0000000  
## C:2020-10-26-C:2020-10-14 0.072184313 -0.2672947598 0.411663385 1.0000000  
## IA:2020-10-26-C:2020-10-14 0.228737896 -0.1361911411 0.593666934 0.8593272  
## C:2020-11-05-C:2020-10-14 0.199802475 -0.1173384439 0.516943395 0.8528212  
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## IA:2020-12-05-IA:2020-11-25 0.108357199 -0.1303878138 0.347102213 0.9976246  
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## C:2021-01-28-IA:2020-11-25 0.009560190 -0.2265354149 0.245655796 1.0000000  
## IA:2021-01-28-IA:2020-11-25 0.085653251 -0.1629020907 0.334208592 0.9999860  
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## C:2021-02-12-IA:2020-11-25 0.132476744 -0.1012087134 0.366162202 0.9490063  
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## IA:2020-12-05-C:2020-12-05 0.182937696 -0.0301713765 0.396046768 0.2313742  
## C:2021-01-22-C:2020-12-05 0.113659541 -0.0964771531 0.323796235 0.9707572  
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## C:2021-04-15-IA:2021-02-26 -0.032419158 -0.2398442975 0.175005981 1.0000000  
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## IA:2021-03-30-C:2021-03-30 0.109500455 -0.0979246847 0.316925594 0.9784964  
## C:2021-04-15-C:2021-03-30 0.297306682 0.0898815428 0.504731822 0.0000437  
## IA:2021-04-15-C:2021-03-30 0.397137715 0.1897125752 0.604562854 0.0000000  
## C:2021-04-15-IA:2021-03-30 0.187806227 -0.0196189120 0.395231367 0.1469210  
## IA:2021-04-15-IA:2021-03-30 0.287637260 0.0802121204 0.495062399 0.0001065  
## IA:2021-04-15-C:2021-04-15 0.099831032 -0.1075941071 0.307256172 0.9940810

Efecto de la IA sobre los niveles de cortisol plasmático

t2way(Cortisol ~ Condicion + Fechas + Condicion:Fechas, data = b,)

## Call:  
## t2way(formula = Cortisol ~ Condicion + Fechas + Condicion:Fechas,   
## data = b)  
##   
## value p.value  
## Condicion 2.0917 0.155  
## Fechas 579.4959 0.001  
## Condicion:Fechas 71.4639 0.001

anovacortisol <- aov(Cortisol ~ Condicion + Fechas + Condicion:Fechas, data = b)  
anova(anovacortisol)

## Analysis of Variance Table  
##   
## Response: Cortisol  
## Df Sum Sq Mean Sq F value Pr(>F)   
## Condicion 1 94260 94260 4.6872 0.03097 \*   
## Fechas 14 4195264 299662 14.9011 < 2.2e-16 \*\*\*  
## Condicion:Fechas 14 1253690 89549 4.4530 1.861e-07 \*\*\*  
## Residuals 408 8204888 20110   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

TukeyHSD(anovacortisol)

## Tukey multiple comparisons of means  
## 95% family-wise confidence level  
##   
## Fit: aov(formula = Cortisol ~ Condicion + Fechas + Condicion:Fechas, data = b)  
##   
## $Condicion  
## diff lwr upr p adj  
## IA-C -29.36455 -56.02728 -2.701829 0.0309671  
##   
## $Fechas  
## diff lwr upr p adj  
## 2020-10-14-2020-10-05 -25.8348922 -219.551546 167.881761 1.0000000  
## 2020-10-26-2020-10-05 -97.8777412 -288.244575 92.489092 0.9143501  
## 2020-11-05-2020-10-05 -18.6532448 -192.312026 155.005536 1.0000000  
## 2020-11-14-2020-10-05 30.6887837 -139.252732 200.630300 0.9999990  
## 2020-11-25-2020-10-05 -31.8028880 -198.765646 135.159870 0.9999981  
## 2020-12-05-2020-10-05 -91.4469730 -252.748322 69.854376 0.8342638  
## 2021-01-22-2020-10-05 -29.4137600 -192.537781 133.710261 0.9999991  
## 2021-01-28-2020-10-05 5.7180584 -156.765001 168.201118 1.0000000  
## 2021-02-05-2020-10-05 -154.3434341 -317.467455 8.780587 0.0860743  
## 2021-02-12-2020-10-05 117.0931525 -42.179168 276.365473 0.4365457  
## 2021-02-26-2020-10-05 -0.4200047 -160.162850 159.322840 1.0000000  
## 2021-03-15-2020-10-05 -117.6348323 -277.871474 42.601809 0.4391010  
## 2021-03-30-2020-10-05 -222.6879852 -382.430830 -62.945140 0.0002685  
## 2021-04-15-2020-10-05 -217.4823058 -381.284600 -53.680012 0.0007412  
## 2020-10-26-2020-10-14 -72.0428490 -258.425481 114.339783 0.9926711  
## 2020-11-05-2020-10-14 7.1816475 -162.100149 176.463444 1.0000000  
## 2020-11-14-2020-10-14 56.5236759 -108.942554 221.989905 0.9979306  
## 2020-11-25-2020-10-14 -5.9679958 -168.373405 156.437413 1.0000000  
## 2020-12-05-2020-10-14 -65.6120808 -222.191388 90.967226 0.9842171  
## 2021-01-22-2020-10-14 -3.5788677 -162.035172 154.877437 1.0000000  
## 2021-01-28-2020-10-14 31.5529506 -126.243434 189.349335 0.9999964  
## 2021-02-05-2020-10-14 -128.5085418 -286.964846 29.947763 0.2690098  
## 2021-02-12-2020-10-14 142.9280447 -11.560227 297.416317 0.1049998  
## 2021-02-26-2020-10-14 25.4148875 -129.558435 180.388210 0.9999997  
## 2021-03-15-2020-10-14 -91.7999401 -247.282208 63.682328 0.7886491  
## 2021-03-30-2020-10-14 -196.8530930 -351.826416 -41.879770 0.0017151  
## 2021-04-15-2020-10-14 -191.6474136 -350.801885 -32.492942 0.0042832  
## 2020-11-05-2020-10-26 79.2244964 -86.213456 244.662448 0.9502336  
## 2020-11-14-2020-10-26 128.5665249 -32.965090 290.098140 0.2989752  
## 2020-11-25-2020-10-26 66.0748532 -92.319927 224.469633 0.9848572  
## 2020-12-05-2020-10-26 6.4307682 -145.984680 158.846216 1.0000000  
## 2021-01-22-2020-10-26 68.4639813 -85.879110 222.807073 0.9737389  
## 2021-01-28-2020-10-26 103.5957996 -50.069708 257.261307 0.5907762  
## 2021-02-05-2020-10-26 -56.4656928 -210.808784 97.877398 0.9957727  
## 2021-02-12-2020-10-26 214.9708937 64.704412 365.237376 0.0001503  
## 2021-02-26-2020-10-26 97.4577365 -53.307380 248.222853 0.6605379  
## 2021-03-15-2020-10-26 -19.7570911 -171.045310 131.531127 1.0000000  
## 2021-03-30-2020-10-26 -124.8102440 -275.575360 25.954872 0.2378107  
## 2021-04-15-2020-10-26 -119.6045646 -274.664344 35.455215 0.3516537  
## 2020-11-14-2020-11-05 49.3420284 -92.115751 190.799808 0.9974195  
## 2020-11-25-2020-11-05 -13.1496432 -151.014603 124.715317 1.0000000  
## 2020-12-05-2020-11-05 -72.7937282 -203.745283 58.157827 0.8536761  
## 2021-01-22-2020-11-05 -10.7605152 -143.950720 122.429690 1.0000000  
## 2021-01-28-2020-11-05 24.3713032 -108.033112 156.775718 0.9999988  
## 2021-02-05-2020-11-05 -135.6901893 -268.880394 -2.499984 0.0409193  
## 2021-02-12-2020-11-05 135.7463973 7.302415 264.190380 0.0267951  
## 2021-02-26-2020-11-05 18.2332401 -110.793738 147.260218 1.0000000  
## 2021-03-15-2020-11-05 -98.9815875 -228.619414 30.656239 0.3693345  
## 2021-03-30-2020-11-05 -204.0347405 -333.061719 -75.007762 0.0000119  
## 2021-04-15-2020-11-05 -198.8290610 -332.849120 -64.809002 0.0000632  
## 2020-11-25-2020-11-14 -62.4916717 -195.643817 70.660474 0.9577166  
## 2020-12-05-2020-11-14 -122.1357566 -248.116137 3.844624 0.0684323  
## 2021-01-22-2020-11-14 -60.1025436 -188.408340 68.203252 0.9583714  
## 2021-01-28-2020-11-14 -24.9707253 -152.460630 102.519179 0.9999972  
## 2021-02-05-2020-11-14 -185.0322177 -313.338014 -56.726422 0.0001248  
## 2021-02-12-2020-11-14 86.4043689 -36.967440 209.776177 0.5238394  
## 2021-02-26-2020-11-14 -31.1087884 -155.087447 92.869870 0.9999391  
## 2021-03-15-2020-11-14 -148.3236160 -272.937871 -23.709361 0.0051562  
## 2021-03-30-2020-11-14 -253.3767689 -377.355427 -129.398111 0.0000000  
## 2021-04-15-2020-11-14 -248.1710894 -377.338124 -119.004055 0.0000000  
## 2020-12-05-2020-11-25 -59.6440850 -181.576443 62.288273 0.9411578  
## 2021-01-22-2020-11-25 2.3891280 -121.944379 126.722635 1.0000000  
## 2021-01-28-2020-11-25 37.5209464 -85.970428 161.012321 0.9994275  
## 2021-02-05-2020-11-25 -122.5405461 -246.874053 1.792961 0.0581018  
## 2021-02-12-2020-11-25 148.8960405 29.660782 268.131299 0.0023231  
## 2021-02-26-2020-11-25 31.3828833 -88.480170 151.245936 0.9998985  
## 2021-03-15-2020-11-25 -85.8319443 -206.352301 34.688412 0.4938177  
## 2021-03-30-2020-11-25 -190.8850972 -310.748150 -71.022044 0.0000097  
## 2021-04-15-2020-11-25 -185.6794178 -310.901486 -60.457349 0.0000640  
## 2021-01-22-2020-12-05 62.0332130 -54.587469 178.653895 0.8909848  
## 2021-01-28-2020-12-05 97.1650314 -18.557404 212.887467 0.2174270  
## 2021-02-05-2020-12-05 -62.8964611 -179.517143 53.724221 0.8801686  
## 2021-02-12-2020-12-05 208.5401255 97.370843 319.709408 0.0000000  
## 2021-02-26-2020-12-05 91.0269683 -20.815394 202.869330 0.2634968  
## 2021-03-15-2020-12-05 -26.1878593 -138.734378 86.358659 0.9999758  
## 2021-03-30-2020-12-05 -131.2410122 -243.083374 -19.398650 0.0064320  
## 2021-04-15-2020-12-05 -126.0353328 -243.602883 -8.467782 0.0224990  
## 2021-01-28-2021-01-22 35.1318183 -83.117930 153.381567 0.9995560  
## 2021-02-05-2021-01-22 -124.9296741 -244.058615 -5.800733 0.0293940  
## 2021-02-12-2021-01-22 146.5069125 32.709151 260.304674 0.0013399  
## 2021-02-26-2021-01-22 28.9937552 -85.461629 143.449140 0.9999317  
## 2021-03-15-2021-01-22 -88.2210723 -203.364634 26.922489 0.3632763  
## 2021-03-30-2021-01-22 -193.2742253 -307.729610 -78.818841 0.0000017  
## 2021-04-15-2021-01-22 -188.0685458 -308.124574 -68.012517 0.0000154  
## 2021-02-05-2021-01-28 -160.0614924 -278.311241 -41.811744 0.0005017  
## 2021-02-12-2021-01-28 111.3750941 -1.501958 224.252146 0.0574382  
## 2021-02-26-2021-01-28 -6.1380631 -119.678071 107.401945 1.0000000  
## 2021-03-15-2021-01-28 -123.3528907 -237.586591 -9.119190 0.0205377  
## 2021-03-30-2021-01-28 -228.4060436 -341.946052 -114.866035 0.0000000  
## 2021-04-15-2021-01-28 -223.2003642 -342.384039 -104.016689 0.0000000  
## 2021-02-12-2021-02-05 271.4365866 157.638825 385.234348 0.0000000  
## 2021-02-26-2021-02-05 153.9234293 39.468045 268.378814 0.0005731  
## 2021-03-15-2021-02-05 36.7086017 -78.434960 151.852163 0.9990208  
## 2021-03-30-2021-02-05 -68.3445512 -182.799935 46.110833 0.7746126  
## 2021-04-15-2021-02-05 -63.1388717 -183.194900 56.917157 0.8992987  
## 2021-02-26-2021-02-12 -117.5131572 -226.408799 -8.617515 0.0207056  
## 2021-03-15-2021-02-12 -234.7279848 -344.346713 -125.109256 0.0000000  
## 2021-03-30-2021-02-12 -339.7811377 -448.676780 -230.885496 0.0000000  
## 2021-04-15-2021-02-12 -334.5754583 -449.343380 -219.807537 0.0000000  
## 2021-03-15-2021-02-26 -117.2148276 -227.516098 -6.913557 0.0250662  
## 2021-03-30-2021-02-26 -222.2679805 -331.850668 -112.685293 0.0000000  
## 2021-04-15-2021-02-26 -217.0623011 -332.482318 -101.642284 0.0000000  
## 2021-03-30-2021-03-15 -105.0531529 -215.354423 5.248117 0.0810145  
## 2021-04-15-2021-03-15 -99.8474735 -215.949951 16.255004 0.1851020  
## 2021-04-15-2021-03-30 5.2056794 -110.214338 120.625697 1.0000000  
##   
## $`Condicion:Fechas`  
## diff lwr upr p adj  
## IA:2020-10-05-C:2020-10-05 -37.46646191 -346.627846 271.6949221 1.0000000  
## C:2020-10-14-C:2020-10-05 -44.86361991 -342.778984 253.0517442 1.0000000  
## IA:2020-10-14-C:2020-10-05 -41.77633079 -350.937715 267.3850533 1.0000000  
## C:2020-10-26-C:2020-10-05 -194.19221100 -483.386205 95.0017831 0.7537962  
## IA:2020-10-26-C:2020-10-05 -8.27522794 -317.436612 300.8861561 1.0000000  
## C:2020-11-05-C:2020-10-05 -39.99791578 -311.765944 231.7701123 1.0000000  
## IA:2020-11-05-C:2020-10-05 -34.77503569 -306.543064 236.9929924 1.0000000  
## C:2020-11-14-C:2020-10-05 12.87793004 -251.408807 277.1646673 1.0000000  
## IA:2020-11-14-C:2020-10-05 12.17983371 -255.561779 279.9214462 1.0000000  
## C:2020-11-25-C:2020-10-05 46.81901363 -211.843958 305.4819854 1.0000000  
## IA:2020-11-25-C:2020-10-05 -160.61015233 -424.896890 103.6765849 0.8940399  
## C:2020-12-05-C:2020-10-05 -97.70977410 -346.963651 151.5441023 0.9998162  
## IA:2020-12-05-C:2020-10-05 -122.09767189 -378.440750 134.2454058 0.9949003  
## C:2021-01-22-C:2020-10-05 -49.75939744 -300.522393 201.0035980 1.0000000  
## IA:2021-01-22-C:2020-10-05 -40.71505441 -302.004114 220.5740047 1.0000000  
## C:2021-01-28-C:2020-10-05 -39.09319332 -289.856189 211.6698021 1.0000000  
## IA:2021-01-28-C:2020-10-05 23.93226100 -234.730711 282.5952328 1.0000000  
## C:2021-02-05-C:2020-10-05 -202.51032204 -458.853400 53.8327556 0.4018330  
## IA:2021-02-05-C:2020-10-05 -146.23806293 -400.516599 108.0404731 0.9399012  
## C:2021-02-12-C:2020-10-05 243.25849399 -5.995382 492.5123704 0.0670401  
## IA:2021-02-12-C:2020-10-05 -46.53865087 -295.792527 202.7152255 1.0000000  
## C:2021-02-26-C:2020-10-05 -0.58599152 -251.348987 250.1770039 1.0000000  
## IA:2021-02-26-C:2020-10-05 -37.52623148 -286.780108 211.7276449 1.0000000  
## C:2021-03-15-C:2020-10-05 -145.43577167 -397.864985 106.9934414 0.9387102  
## IA:2021-03-15-C:2020-10-05 -129.67535343 -378.929230 119.5785230 0.9821284  
## C:2021-03-30-C:2020-10-05 -245.58903930 -496.352035 5.1739561 0.0643513  
## IA:2021-03-30-C:2020-10-05 -238.19589809 -487.449775 11.0579783 0.0850254  
## C:2021-04-15-C:2020-10-05 -230.50657160 -482.935785 21.9226414 0.1355008  
## IA:2021-04-15-C:2020-10-05 -239.36069839 -500.649758 21.9283607 0.1314080  
## C:2020-10-14-IA:2020-10-05 -7.39715800 -305.312522 290.5182061 1.0000000  
## IA:2020-10-14-IA:2020-10-05 -4.30986888 -313.471253 304.8515152 1.0000000  
## C:2020-10-26-IA:2020-10-05 -156.72574909 -445.919743 132.4682450 0.9698808  
## IA:2020-10-26-IA:2020-10-05 29.19123397 -279.970150 338.3526180 1.0000000  
## C:2020-11-05-IA:2020-10-05 -2.53145387 -274.299482 269.2365742 1.0000000  
## IA:2020-11-05-IA:2020-10-05 2.69142622 -269.076602 274.4594543 1.0000000  
## C:2020-11-14-IA:2020-10-05 50.34439195 -213.942345 314.6311292 1.0000000  
## IA:2020-11-14-IA:2020-10-05 49.64629562 -218.095317 317.3879081 1.0000000  
## C:2020-11-25-IA:2020-10-05 84.28547554 -174.377496 342.9484473 0.9999957  
## IA:2020-11-25-IA:2020-10-05 -123.14369042 -387.430428 141.1430468 0.9963636  
## C:2020-12-05-IA:2020-10-05 -60.24331220 -309.497189 189.0105642 1.0000000  
## IA:2020-12-05-IA:2020-10-05 -84.63120998 -340.974288 171.7118677 0.9999943  
## C:2021-01-22-IA:2020-10-05 -12.29293553 -263.055931 238.4700599 1.0000000  
## IA:2021-01-22-IA:2020-10-05 -3.24859250 -264.537652 258.0404666 1.0000000  
## C:2021-01-28-IA:2020-10-05 -1.62673142 -252.389727 249.1362640 1.0000000  
## IA:2021-01-28-IA:2020-10-05 61.39872291 -197.264249 320.0616947 1.0000000  
## C:2021-02-05-IA:2020-10-05 -165.04386013 -421.386938 91.2992175 0.8223863  
## IA:2021-02-05-IA:2020-10-05 -108.77160103 -363.050137 145.5069350 0.9991097  
## C:2021-02-12-IA:2020-10-05 280.72495590 31.471079 529.9788323 0.0088554  
## IA:2021-02-12-IA:2020-10-05 -9.07218896 -258.326065 240.1816874 1.0000000  
## C:2021-02-26-IA:2020-10-05 36.88047039 -213.882525 287.6434658 1.0000000  
## IA:2021-02-26-IA:2020-10-05 -0.05976957 -249.313646 249.1941068 1.0000000  
## C:2021-03-15-IA:2020-10-05 -107.96930976 -360.398523 144.4599033 0.9991113  
## IA:2021-03-15-IA:2020-10-05 -92.20889152 -341.462768 157.0449849 0.9999400  
## C:2021-03-30-IA:2020-10-05 -208.12257739 -458.885573 42.6404180 0.2956695  
## IA:2021-03-30-IA:2020-10-05 -200.72943618 -449.983313 48.5244402 0.3591942  
## C:2021-04-15-IA:2020-10-05 -193.04010969 -445.469323 59.3891034 0.4761704  
## IA:2021-04-15-IA:2020-10-05 -201.89423648 -463.183296 59.3948227 0.4523225  
## IA:2020-10-14-C:2020-10-14 3.08728912 -294.828075 301.0026532 1.0000000  
## C:2020-10-26-C:2020-10-14 -149.32859110 -426.467489 127.8103072 0.9719574  
## IA:2020-10-26-C:2020-10-14 36.58839197 -261.326972 334.5037560 1.0000000  
## C:2020-11-05-C:2020-10-14 4.86570413 -254.037104 263.7685118 1.0000000  
## IA:2020-11-05-C:2020-10-14 10.08858422 -248.814223 268.9913919 1.0000000  
## C:2020-11-14-C:2020-10-14 57.74154994 -193.296858 308.7799578 1.0000000  
## IA:2020-11-14-C:2020-10-14 57.04345362 -197.629619 311.7165260 1.0000000  
## C:2020-11-25-C:2020-10-14 91.68263353 -153.428231 336.7934977 0.9999254  
## IA:2020-11-25-C:2020-10-14 -115.74653242 -366.784940 135.2918755 0.9969178  
## C:2020-12-05-C:2020-10-14 -52.84615420 -288.006307 182.3139990 1.0000000  
## IA:2020-12-05-C:2020-10-14 -77.23405199 -319.895496 165.4273916 0.9999974  
## C:2021-01-22-C:2020-10-14 -4.89577754 -241.654901 231.8633461 1.0000000  
## IA:2021-01-22-C:2020-10-14 4.14856550 -243.732001 252.0291319 1.0000000  
## C:2021-01-28-C:2020-10-14 5.77042658 -230.988697 242.5295502 1.0000000  
## IA:2021-01-28-C:2020-10-14 68.79588091 -176.314983 313.9067451 0.9999998  
## C:2021-02-05-C:2020-10-14 -157.64670214 -400.308146 85.0147415 0.8088710  
## IA:2021-02-05-C:2020-10-14 -101.37444303 -341.853915 139.1050294 0.9993100  
## C:2021-02-12-C:2020-10-14 288.12211389 52.961961 523.2822671 0.0018696  
## IA:2021-02-12-C:2020-10-14 -1.67503096 -236.835184 233.4851223 1.0000000  
## C:2021-02-26-C:2020-10-14 44.27762839 -192.481495 281.0367520 1.0000000  
## IA:2021-02-26-C:2020-10-14 7.33738842 -227.822765 242.4975416 1.0000000  
## C:2021-03-15-C:2020-10-14 -100.57215176 -339.095338 137.9510344 0.9993073  
## IA:2021-03-15-C:2020-10-14 -84.81173352 -319.971887 150.3484197 0.9999639  
## C:2021-03-30-C:2020-10-14 -200.72541939 -437.484543 36.0337042 0.2540469  
## IA:2021-03-30-C:2020-10-14 -193.33227819 -428.492431 41.8278750 0.3151216  
## C:2021-04-15-C:2020-10-14 -185.64295169 -424.166138 52.8802345 0.4357111  
## IA:2021-04-15-C:2020-10-14 -194.49707848 -442.377645 53.3834879 0.4172209  
## C:2020-10-26-IA:2020-10-14 -152.41588021 -441.609874 136.7781139 0.9788243  
## IA:2020-10-26-IA:2020-10-14 33.50110285 -275.660281 342.6624869 1.0000000  
## C:2020-11-05-IA:2020-10-14 1.77841501 -269.989613 273.5464431 1.0000000  
## IA:2020-11-05-IA:2020-10-14 7.00129511 -264.766733 278.7693232 1.0000000  
## C:2020-11-14-IA:2020-10-14 54.65426083 -209.632476 318.9409981 1.0000000  
## IA:2020-11-14-IA:2020-10-14 53.95616450 -213.785448 321.6977770 1.0000000  
## C:2020-11-25-IA:2020-10-14 88.59534442 -170.067627 347.2583162 0.9999875  
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## C:2021-02-26-C:2020-12-05 97.12378258 -74.424500 268.6720655 0.9495195  
## IA:2021-02-26-C:2020-12-05 60.18354262 -109.151121 229.5182066 0.9999732  
## C:2021-03-15-C:2020-12-05 -47.72599756 -221.700827 126.2488314 0.9999999  
## IA:2021-03-15-C:2020-12-05 -31.96557932 -201.300243 137.3690846 1.0000000  
## C:2021-03-30-C:2020-12-05 -147.87926520 -319.427548 23.6690177 0.2237032  
## IA:2021-03-30-C:2020-12-05 -140.48612399 -309.820788 28.8485400 0.2964541  
## C:2021-04-15-C:2020-12-05 -132.79679749 -306.771626 41.1780315 0.4804587  
## IA:2021-04-15-C:2020-12-05 -141.65092428 -328.248636 44.9467872 0.4931571  
## C:2021-01-22-IA:2020-12-05 72.33827445 -109.356778 254.0333265 0.9997544  
## IA:2021-01-22-IA:2020-12-05 81.38261749 -114.584177 277.3494118 0.9994706  
## C:2021-01-28-IA:2020-12-05 83.00447857 -98.690573 264.6995306 0.9973389  
## IA:2021-01-28-IA:2020-12-05 146.02993289 -46.421477 338.4813424 0.4941797  
## C:2021-02-05-IA:2020-12-05 -80.41265015 -269.734560 108.9092596 0.9992128  
## IA:2021-02-05-IA:2020-12-05 -24.14039104 -210.657377 162.3765946 1.0000000  
## C:2021-02-12-IA:2020-12-05 365.35616588 185.749632 544.9626996 0.0000000  
## IA:2021-02-12-IA:2020-12-05 75.55902102 -104.047513 255.1655548 0.9993343  
## C:2021-02-26-IA:2020-12-05 121.51168037 -60.183372 303.2067324 0.7610226  
## IA:2021-02-26-IA:2020-12-05 84.57144041 -95.035093 264.1779742 0.9957202  
## C:2021-03-15-IA:2020-12-05 -23.33809978 -207.325925 160.6497250 1.0000000  
## IA:2021-03-15-IA:2020-12-05 -7.57768154 -187.184215 172.0288522 1.0000000  
## C:2021-03-30-IA:2020-12-05 -123.49136741 -305.186419 58.2036846 0.7316248  
## IA:2021-03-30-IA:2020-12-05 -116.09822620 -295.704760 63.5083076 0.8164945  
## C:2021-04-15-IA:2020-12-05 -108.40889970 -292.396724 75.5789251 0.9222039  
## IA:2021-04-15-IA:2020-12-05 -117.26302650 -313.229821 78.7037679 0.9089670  
## IA:2021-01-22-C:2021-01-22 9.04434303 -179.564487 197.6531734 1.0000000  
## C:2021-01-28-C:2021-01-22 10.66620412 -163.067495 184.3999036 1.0000000  
## IA:2021-01-28-C:2021-01-22 73.69165844 -111.261988 258.6453052 0.9997509  
## C:2021-02-05-C:2021-01-22 -152.75092460 -334.445977 28.9441274 0.2701516  
## IA:2021-02-05-C:2021-01-22 -96.47866549 -275.249167 82.2918364 0.9713982  
## C:2021-02-12-C:2021-01-22 293.01789143 121.469608 464.5661744 0.0000001  
## IA:2021-02-12-C:2021-01-22 3.22074657 -168.327536 174.7690295 1.0000000  
## C:2021-02-26-C:2021-01-22 49.17340592 -124.560294 222.9071054 0.9999998  
## IA:2021-02-26-C:2021-01-22 12.23316596 -159.315117 183.7814489 1.0000000  
## C:2021-03-15-C:2021-01-22 -95.67637423 -271.806514 80.4537653 0.9689989  
## IA:2021-03-15-C:2021-01-22 -79.91595599 -251.464239 91.6323269 0.9963753  
## C:2021-03-30-C:2021-01-22 -195.82964186 -369.563341 -22.0959424 0.0087346  
## IA:2021-03-30-C:2021-01-22 -188.43650065 -359.984784 -16.8882177 0.0133066  
## C:2021-04-15-C:2021-01-22 -180.74717415 -356.877314 -4.6170346 0.0358159  
## IA:2021-04-15-C:2021-01-22 -189.60130095 -378.210131 -0.9924706 0.0468151  
## C:2021-01-28-IA:2021-01-22 1.62186108 -186.986969 190.2306915 1.0000000  
## IA:2021-01-28-IA:2021-01-22 64.64731541 -134.344504 263.6391343 0.9999959  
## C:2021-02-05-IA:2021-01-22 -161.79526764 -357.762062 34.1715267 0.3063465  
## IA:2021-02-05-IA:2021-01-22 -105.52300853 -298.781346 87.7353287 0.9669868  
## C:2021-02-12-IA:2021-01-22 283.97354839 97.375837 470.5712599 0.0000075  
## IA:2021-02-12-IA:2021-01-22 -5.82359646 -192.421308 180.7741150 1.0000000  
## C:2021-02-26-IA:2021-01-22 40.12906289 -148.479767 228.7378933 1.0000000  
## IA:2021-02-26-IA:2021-01-22 3.18882292 -183.408889 189.7865344 1.0000000  
## C:2021-03-15-IA:2021-01-22 -104.72071726 -295.539266 86.0978317 0.9648995  
## IA:2021-03-15-IA:2021-01-22 -88.96029902 -275.558011 97.6374125 0.9948279  
## C:2021-03-30-IA:2021-01-22 -204.87398489 -393.482815 -16.2651545 0.0158407  
## IA:2021-03-30-IA:2021-01-22 -197.48084368 -384.078555 -10.8831322 0.0233517  
## C:2021-04-15-IA:2021-01-22 -189.79151719 -380.610066 1.0270318 0.0534493  
## IA:2021-04-15-IA:2021-01-22 -198.64564398 -401.039279 3.7479909 0.0627353  
## IA:2021-01-28-C:2021-01-28 63.02545433 -121.928192 247.9791011 0.9999888  
## C:2021-02-05-C:2021-01-28 -163.41712872 -345.112181 18.2779233 0.1560856  
## IA:2021-02-05-C:2021-01-28 -107.14486961 -285.915372 71.6256323 0.9074976  
## C:2021-02-12-C:2021-01-28 282.35168731 110.803404 453.8999702 0.0000005  
## IA:2021-02-12-C:2021-01-28 -7.44545755 -178.993740 164.1028254 1.0000000  
## C:2021-02-26-C:2021-01-28 38.50720180 -135.226498 212.2409013 1.0000000  
## IA:2021-02-26-C:2021-01-28 1.56696184 -169.981321 173.1152448 1.0000000  
## C:2021-03-15-C:2021-01-28 -106.34257835 -282.472718 69.7875612 0.9005223  
## IA:2021-03-15-C:2021-01-28 -90.58216010 -262.130443 80.9661228 0.9783040  
## C:2021-03-30-C:2021-01-28 -206.49584598 -380.229545 -32.7621465 0.0033880  
## IA:2021-03-30-C:2021-01-28 -199.10270477 -370.650988 -27.5544218 0.0052556  
## C:2021-04-15-C:2021-01-28 -191.41337827 -367.543518 -15.2832387 0.0157210  
## IA:2021-04-15-C:2021-01-28 -200.26750506 -388.876335 -11.6586747 0.0222638  
## C:2021-02-05-IA:2021-01-28 -226.44258304 -418.893993 -33.9911735 0.0040942  
## IA:2021-02-05-IA:2021-01-28 -170.17032394 -359.863090 19.5224420 0.1597791  
## C:2021-02-12-IA:2021-01-28 219.32623299 36.423892 402.2285744 0.0028604  
## IA:2021-02-12-IA:2021-01-28 -70.47091187 -253.373253 112.4314295 0.9998676  
## C:2021-02-26-IA:2021-01-28 -24.51825252 -209.471899 160.4353942 1.0000000  
## IA:2021-02-26-IA:2021-01-28 -61.45849248 -244.360834 121.4438489 0.9999916  
## C:2021-03-15-IA:2021-01-28 -169.36803267 -356.574547 17.8384821 0.1478739  
## IA:2021-03-15-IA:2021-01-28 -153.60761443 -336.509956 29.2947270 0.2721556  
## C:2021-03-30-IA:2021-01-28 -269.52130030 -454.474947 -84.5676536 0.0000276  
## IA:2021-03-30-IA:2021-01-28 -262.12815909 -445.030500 -79.2258177 0.0000443  
## C:2021-04-15-IA:2021-01-28 -254.43883260 -441.645347 -67.2323178 0.0001796  
## IA:2021-04-15-IA:2021-01-28 -263.29295939 -462.284778 -64.3011404 0.0003456  
## IA:2021-02-05-C:2021-02-05 56.27225911 -130.244727 242.7892448 0.9999992  
## C:2021-02-12-C:2021-02-05 445.76881603 266.162282 625.3753498 0.0000000  
## IA:2021-02-12-C:2021-02-05 155.97167117 -23.634863 335.5782049 0.2109203  
## C:2021-02-26-C:2021-02-05 201.92433052 20.229279 383.6193825 0.0110370  
## IA:2021-02-26-C:2021-02-05 164.98409056 -14.622443 344.5906243 0.1279707  
## C:2021-03-15-C:2021-02-05 57.07455037 -126.913274 241.0623751 0.9999985  
## IA:2021-03-15-C:2021-02-05 72.83496861 -106.771565 252.4415024 0.9996553  
## C:2021-03-30-C:2021-02-05 -43.07871726 -224.773769 138.6163348 1.0000000  
## IA:2021-03-30-C:2021-02-05 -35.68557605 -215.292110 143.9209577 1.0000000  
## C:2021-04-15-C:2021-02-05 -27.99624955 -211.984074 155.9915752 1.0000000  
## IA:2021-04-15-C:2021-02-05 -36.85037635 -232.817171 159.1164180 1.0000000  
## C:2021-02-12-IA:2021-02-05 389.49655692 212.849147 566.1439667 0.0000000  
## IA:2021-02-12-IA:2021-02-05 99.69941206 -76.947998 276.3468219 0.9512729  
## C:2021-02-26-IA:2021-02-05 145.65207141 -33.118430 324.4225733 0.3341164  
## IA:2021-02-26-IA:2021-02-05 108.71183145 -67.935578 285.3592413 0.8805953  
## C:2021-03-15-IA:2021-02-05 0.80229127 -180.298013 181.9025952 1.0000000  
## IA:2021-03-15-IA:2021-02-05 16.56270951 -160.084700 193.2101193 1.0000000  
## C:2021-03-30-IA:2021-02-05 -99.35097637 -278.121478 79.4195255 0.9592396  
## IA:2021-03-30-IA:2021-02-05 -91.95783516 -268.605245 84.6895747 0.9819829  
## C:2021-04-15-IA:2021-02-05 -84.26850866 -265.368813 96.8317953 0.9964401  
## IA:2021-04-15-IA:2021-02-05 -93.12263545 -286.380973 100.1357018 0.9939301  
## IA:2021-02-12-C:2021-02-12 -289.79714486 -459.131809 -120.4624809 0.0000001  
## C:2021-02-26-C:2021-02-12 -243.84448551 -415.392768 -72.2962026 0.0000555  
## IA:2021-02-26-C:2021-02-12 -280.78472547 -450.119389 -111.4500615 0.0000004  
## C:2021-03-15-C:2021-02-12 -388.69426566 -562.669095 -214.7194367 0.0000000  
## IA:2021-03-15-C:2021-02-12 -372.93384742 -542.268511 -203.5991835 0.0000000  
## C:2021-03-30-C:2021-02-12 -488.84753329 -660.395816 -317.2992504 0.0000000  
## IA:2021-03-30-C:2021-02-12 -481.45439208 -650.789056 -312.1197281 0.0000000  
## C:2021-04-15-C:2021-02-12 -473.76506558 -647.739895 -299.7902366 0.0000000  
## IA:2021-04-15-C:2021-02-12 -482.61919238 -669.216904 -296.0214809 0.0000000  
## C:2021-02-26-IA:2021-02-12 45.95265935 -125.595624 217.5009423 0.9999999  
## IA:2021-02-26-IA:2021-02-12 9.01241939 -160.322245 178.3470833 1.0000000  
## C:2021-03-15-IA:2021-02-12 -98.89712080 -272.871950 75.0777081 0.9471662  
## IA:2021-03-15-IA:2021-02-12 -83.13670256 -252.471367 86.1979614 0.9920056  
## C:2021-03-30-IA:2021-02-12 -199.05038843 -370.598671 -27.5021055 0.0052805  
## IA:2021-03-30-IA:2021-02-12 -191.65724722 -360.991911 -22.3225833 0.0081492  
## C:2021-04-15-IA:2021-02-12 -183.96792073 -357.942750 -9.9930918 0.0236348  
## IA:2021-04-15-IA:2021-02-12 -192.82204752 -379.419759 -6.2243360 0.0326232  
## IA:2021-02-26-C:2021-02-26 -36.94023996 -208.488523 134.6080430 1.0000000  
## C:2021-03-15-C:2021-02-26 -144.84978015 -320.979920 31.2803594 0.3144344  
## IA:2021-03-15-C:2021-02-26 -129.08936191 -300.637645 42.4589210 0.5133995  
## C:2021-03-30-C:2021-02-26 -245.00304778 -418.736747 -71.2693483 0.0000688  
## IA:2021-03-30-C:2021-02-26 -237.60990657 -409.158190 -66.0616236 0.0001108  
## C:2021-04-15-C:2021-02-26 -229.92058007 -406.050720 -53.7904405 0.0004741  
## IA:2021-04-15-C:2021-02-26 -238.77470687 -427.383537 -50.1658765 0.0009418  
## C:2021-03-15-IA:2021-02-26 -107.90954019 -281.884369 66.0652888 0.8716291  
## IA:2021-03-15-IA:2021-02-26 -92.14912195 -261.483786 77.1855420 0.9683148  
## C:2021-03-30-IA:2021-02-26 -208.06280782 -379.611091 -36.5145249 0.0022903  
## IA:2021-03-30-IA:2021-02-26 -200.66966661 -370.004331 -31.3350027 0.0035836  
## C:2021-04-15-IA:2021-02-26 -192.98034011 -366.955169 -19.0055112 0.0113797  
## IA:2021-04-15-IA:2021-02-26 -201.83446691 -388.432178 -15.2367554 0.0168996  
## IA:2021-03-15-C:2021-03-15 15.76041824 -158.214411 189.7352472 1.0000000  
## C:2021-03-30-C:2021-03-15 -100.15326763 -276.283407 75.9768719 0.9469829  
## IA:2021-03-30-C:2021-03-15 -92.76012642 -266.734955 81.2147025 0.9754319  
## C:2021-04-15-C:2021-03-15 -85.07079993 -263.565208 93.4236084 0.9948520  
## IA:2021-04-15-C:2021-03-15 -93.92492672 -284.743476 96.8936222 0.9917032  
## C:2021-03-30-IA:2021-03-15 -115.91368587 -287.461969 55.6345971 0.7425011  
## IA:2021-03-30-IA:2021-03-15 -108.52054466 -277.855209 60.8141193 0.8290968  
## C:2021-04-15-IA:2021-03-15 -100.83121817 -274.806047 73.1436108 0.9346448  
## IA:2021-04-15-IA:2021-03-15 -109.68534496 -296.283056 76.9123665 0.9241043  
## IA:2021-03-30-C:2021-03-30 7.39314121 -164.155142 178.9414241 1.0000000  
## C:2021-04-15-C:2021-03-30 15.08246771 -161.047672 191.2126073 1.0000000  
## IA:2021-04-15-C:2021-03-30 6.22834091 -182.380489 194.8371713 1.0000000  
## C:2021-04-15-IA:2021-03-30 7.68932650 -166.285502 181.6641554 1.0000000  
## IA:2021-04-15-IA:2021-03-30 -1.16480030 -187.762512 185.4329112 1.0000000  
## IA:2021-04-15-C:2021-04-15 -8.85412679 -199.672676 181.9644222 1.0000000

Supuestos estadísticos

Homocedasticidad para datos productivos

leveneTest(Peso ~ Condición\*Fechas, data = a, center = "median")

## Levene's Test for Homogeneity of Variance (center = "median")  
## Df F value Pr(>F)   
## group 33 14.406 < 2.2e-16 \*\*\*  
## 1526   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

leveneTest(Largo ~ Condición\*Fechas, data = a, center = "median")

## Levene's Test for Homogeneity of Variance (center = "median")  
## Df F value Pr(>F)   
## group 33 5.3081 < 2.2e-16 \*\*\*  
## 1526   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

leveneTest(K ~ Condición\*Fechas, data = a, center = "median")

## Levene's Test for Homogeneity of Variance (center = "median")  
## Df F value Pr(>F)   
## group 33 3.9135 1.154e-12 \*\*\*  
## 1526   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

leveneTest(NKA ~ Condición\*Fechas, data = a2, center = "median")

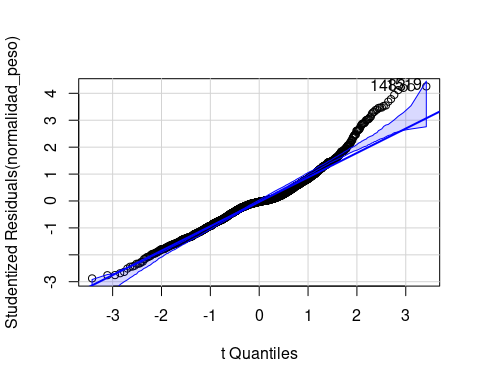
## Levene's Test for Homogeneity of Variance (center = "median")  
## Df F value Pr(>F)   
## group 29 3.2368 5.341e-08 \*\*\*  
## 570   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Normalidad para datos productivos

normalidad\_peso <- lm(Peso ~ Condición\*Fechas, data = a)  
shapiro.test(normalidad\_peso$residuals)

##   
## Shapiro-Wilk normality test  
##   
## data: normalidad\_peso$residuals  
## W = 0.96061, p-value < 2.2e-16

qqPlot(normalidad\_peso)

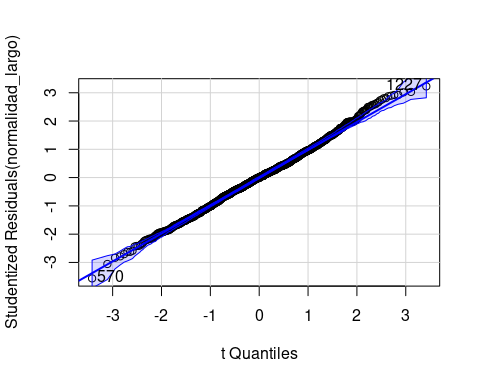


## [1] 1483 1519

normalidad\_largo <- lm(Largo ~ Condición\*Fechas, data = a)  
shapiro.test(normalidad\_largo$residuals)

##   
## Shapiro-Wilk normality test  
##   
## data: normalidad\_largo$residuals  
## W = 0.99768, p-value = 0.02366

qqPlot(normalidad\_largo)

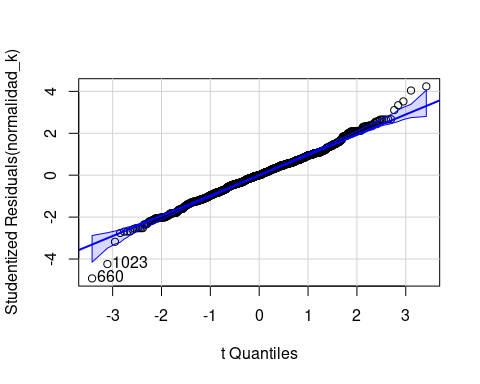


## [1] 570 1227

normalidad\_k <- lm(K ~ Condición\*Fechas, data = a)  
shapiro.test(normalidad\_k$residuals)

##   
## Shapiro-Wilk normality test  
##   
## data: normalidad\_k$residuals  
## W = 0.99326, p-value = 1.505e-06

qqPlot(normalidad\_k)

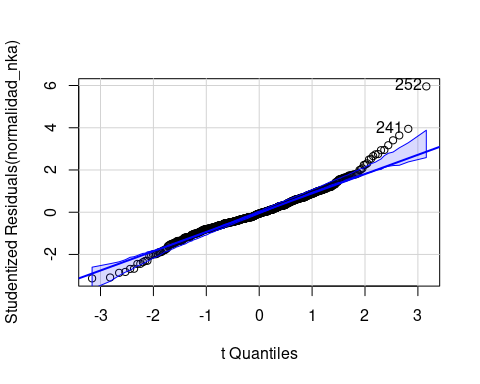


## [1] 660 1023

normalidad\_nka <- lm(NKA ~ Condición\*Fechas, data = a2)  
shapiro.test(normalidad\_nka$residuals)

##   
## Shapiro-Wilk normality test  
##   
## data: normalidad\_nka$residuals  
## W = 0.96779, p-value = 3.335e-10

qqPlot(normalidad\_nka)



## [1] 241 252

Homocedasticidad para datos plasmáticos

leveneTest(Glucosa ~ Condicion\*Fechas, data = b, center = "median")

## Levene's Test for Homogeneity of Variance (center = "median")  
## Df F value Pr(>F)  
## group 29 1.3141 0.1306  
## 423

leveneTest(Calcio ~ Condicion\*Fechas, data = b, center = "median")

## Levene's Test for Homogeneity of Variance (center = "median")  
## Df F value Pr(>F)  
## group 29 0.8072 0.753  
## 423

leveneTest(Cloro ~ Condicion\*Fechas, data = b, center = "median")

## Levene's Test for Homogeneity of Variance (center = "median")  
## Df F value Pr(>F)   
## group 29 2.1747 0.0005156 \*\*\*  
## 423   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

leveneTest(Albumina ~ Condicion\*Fechas, data = b, center = "median")

## Levene's Test for Homogeneity of Variance (center = "median")  
## Df F value Pr(>F)  
## group 29 1.2559 0.1724  
## 423

leveneTest(Cortisol ~ Condicion\*Fechas, data = b, center = "median")

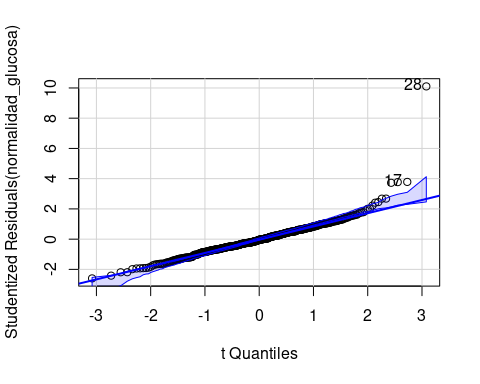
## Levene's Test for Homogeneity of Variance (center = "median")  
## Df F value Pr(>F)   
## group 29 3.0563 4.474e-07 \*\*\*  
## 408   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Normalidad para datos plasmáticos

normalidad\_glucosa <- lm(Glucosa ~ Condicion\*Fechas, data = b)  
shapiro.test(normalidad\_glucosa$residuals)

##   
## Shapiro-Wilk normality test  
##   
## data: normalidad\_glucosa$residuals  
## W = 0.91091, p-value = 1.146e-15

qqPlot(normalidad\_glucosa)

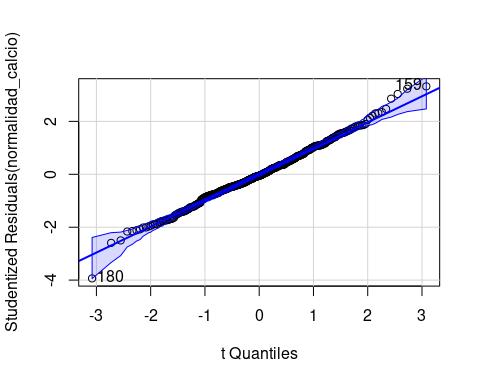


## [1] 17 28

normalidad\_calcio <- lm(Calcio ~ Condicion\*Fechas, data = b)  
shapiro.test(normalidad\_calcio$residuals)

##   
## Shapiro-Wilk normality test  
##   
## data: normalidad\_calcio$residuals  
## W = 0.99464, p-value = 0.1151

qqPlot(normalidad\_calcio)

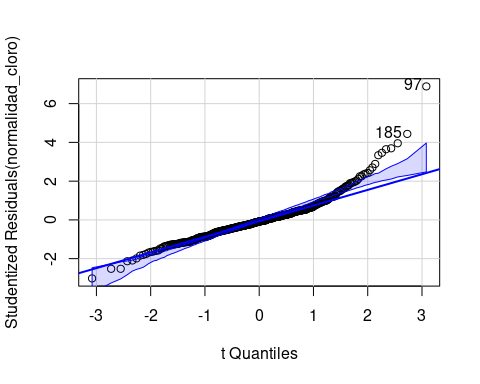


## [1] 159 180

normalidad\_cloro <- lm(Cloro ~ Condicion\*Fechas, data = b)  
shapiro.test(normalidad\_cloro$residuals)

##   
## Shapiro-Wilk normality test  
##   
## data: normalidad\_cloro$residuals  
## W = 0.91728, p-value = 4.712e-15

qqPlot(normalidad\_cloro)

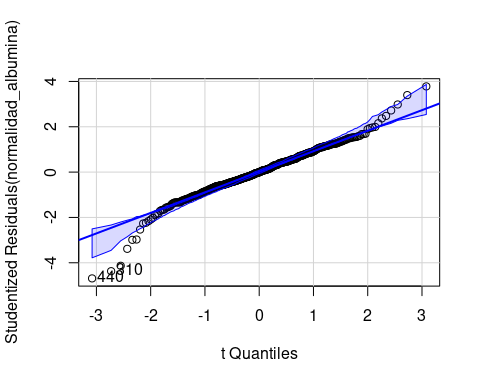


## [1] 97 185

normalidad\_albumina <- lm(Albumina ~ Condicion\*Fechas, data = b)  
shapiro.test(normalidad\_albumina$residuals)

##   
## Shapiro-Wilk normality test  
##   
## data: normalidad\_albumina$residuals  
## W = 0.96955, p-value = 4.269e-08

qqPlot(normalidad\_albumina)

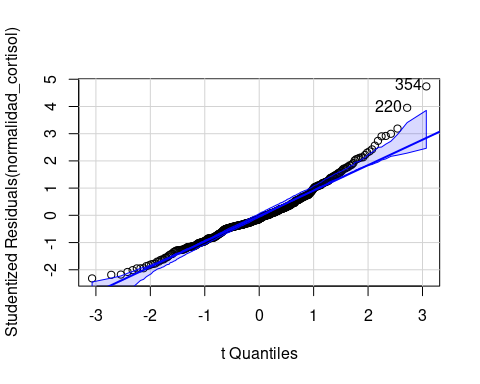


## [1] 310 440

normalidad\_cortisol <- lm(Cortisol ~ Condicion\*Fechas, data = b)  
shapiro.test(normalidad\_cortisol$residuals)

##   
## Shapiro-Wilk normality test  
##   
## data: normalidad\_cortisol$residuals  
## W = 0.96833, p-value = 3.96e-08

qqPlot(normalidad\_cortisol)



## [1] 220 354

**Interpretación de resultados y conclusión**

Para evaluar si la IA genera un efecto en la fisiología de los peces se realizo un ANOVA de dos vías con interacción, donde las variables condición y fecha serán las variables predictoras y para el análisis se ocupo el paquete estadístico WRS2, el cual realiza analisis estadísticos robustos cuando no se pueden cumplir los supuestos de homocedasticidad y es robusto a la presencia de outlier. Al realizar la visualización de los dato se puede apreciar el incremento en la varianza de los datos, sugiriendo heterocedasticidad, lo cual fue confirmado con los test de levene (p < 0.05), por lo tanto realizamos anova de dos vías utilizando el paquete WRS2 y además realizamos el anova de dos vías tradicional para ir comparando ambas pruebas estadísticas. Para nuestra sorpresa el anova tradicional a pesar de existir heterocedasticidad en los datos, de todas formas fue capaz de detectar efectos significativos de los factores predictivos e incluso fue mucho más sensible en identificar diferencias significativas que utilizando el paquete WRS2. En ambos modelos se puede apreciar que la IA afecta la fisiología de los peces y este efecto es más evidente en condiciones de agua de mar que en agua dulce, ya que observa un incremento del peso y el largo en los últimos muestreos y el test a posteriori logra detectar diferencias significativas de la condición control con los peces mantenidos en la IA en los últimos 4 muestreos. Los niveles de Cortisol se reducen significativamente en los últimos muestreos, sugiriendo una reducción del estrés en los peces, además los niveles de Calcio disminuyen significativamente sugiriendo que los peces están captando el ion Calcio y utilizandolo para aumentar el crecimiento del tejido oseo. Se detectaron varias correlaciones significativas, con los niveles más altos en las variables largo y peso (0.95) lo cual es plausible, mientras que los niveles de calcio y albúmina también presentaron un alto nivel de correlación (0.68) lo cual es lógico ya que se ha descrito que la proteína albúmina moviliza ion calcio, sugiriendo procesos que afectan el proceso de crecimiento en peces. En conclusión, la IA mejora el crecimiento de los peces, especialmente en agua de mar y además modifica la fisiología de *Salmo salar*, mejorando procesos fisiológicos asociados al crecimiento, tales como disminución del cortisol e incremento de proteínas tales como albúmina. Muchos más estudios son necesarios que permitan detallar si los efectos de la IA son específicos y de corto plazo de cada salinidad o si es un efecto acumulativo donde la IA es necesaría en agua dulce para generar los efectos en agua de mar.