Statistics for Social Sciences I

Test II (A)

Student: _____

Group: _____ **Date:** _____

Exercise 1. In the USA, (according to a recent study by the Pew Research Centre) approximately 48% of voters identify themselves as Democrats and 44% identify themselves as Republicans and the remainder may be classified as Independents. Approximately 75% of Republicans support the Death penalty, while amongst Independents, support is around 55% and this falls to 40% amongst Democrats.

(a) If a US citizen is chosen at random, what is the probability they support the death penalty? (1.5 points)

(b) Supposing that the person does support the death penalty, calculate the probability that they are a Republican. (1.5 points)

Exercise 2. The following table comes from a survey of voting intentions in the UK carried out by ICM for The Guardian newspaper on April 18th 2017 just after the Prime Minister Theresa May announced a snap election.

Table 5
Published Vote Intention Figures
Percentages derived from the responses of 928 respondents

	Total
Conservative	46%
Labour	25%
Liberal Democrat	11%
SNP	4%
Plaid Cymru	*
Green	4%
UKIP	8%
Other	1%

Assuming that these results are typical of UK voters:

(a) What is the probability that three UK voters all intend to vote Conservative? (1 point)

(b) What is the probability that one votes Conservative, one votes Labour, and one votes Liberal Democrat? (1 point)

(c) What are we assuming in the parts (a) and (b)? Do the assumptions seem reasonable? (1 point)

Exercise 3. The following article was published online by Reuters on February 1st 2017, just after the US President, Donald Trump announced a temporary ban on visitors from a number of Muslim countries.

Exclusive: A third of Americans think Trump's travel ban will make them safer

By Chris Kahn | NEW YORK

Imposing a temporary travel ban on citizens from seven Muslim countries, President Donald Trump said the move would help protect the United States from terrorism. But less than one-third of Americans believe the move makes them "more safe," according to a Reuters/Ipsos opinion poll released on Tuesday.

The Jan. 30-31 poll found roughly one in two Americans backed the ban, which also suspends admission of all refugees for 120 days, although there were sharp divisions along party lines.

Trump has pushed back against critics who say the travel ban targets Muslims. He says the "extreme vetting" is necessary to protect the country and its borders. "This is not about religion," Trump said in a statement after announcing the travel ban on Friday. "This is about terror and keeping our country safe."

In the Reuters/Ipsos poll some 31 percent of people said the ban made them feel "more safe," while 26 percent said it made them feel "less safe." Another 33 percent said it would not make any difference and the rest said they don't know.

Trump's executive order blocked citizens from Iran, Iraq, Libya, Somalia, Sudan, Syria and Yemen and placed an indefinite ban on Syrian refugees.

Some Republican lawmakers criticized Trump's order and said it could backfire by giving terrorist organizations a new recruitment message. "This executive order sends a signal, intended or not, that America does not want Muslims coming into our country," senators John McCain of Arizona and Lindsey Graham of South Carolina said in a joint statement.

The Reuters/Ipsos poll found that 49 percent of Americans agreed with the order and 41 percent disagreed. Some 53 percent of Democrats said they "strongly disagree" with Trump's action while 51 percent of Republicans said they "strongly agree."

Democrats were more than three times as likely as Republicans to say that the "U.S. should continue to take in immigrants and refugees," and Republicans were more than three times as likely as Democrats to agree that "banning people from Muslim countries is necessary to prevent terrorism."

Cheryl Hoffman, 46, of Sumerduck, Virginia said she was thrilled that Trump ordered the ban. "I understand that the country was founded on immigrants," said Hoffman, who participated in the poll. "Please, I get that. But I'm worried that refugees are coming in and being supported by my tax dollars."

Westy Egmont, director of the Immigrant Integration Lab at Boston College, said Americans have grown increasingly hostile toward refugees and immigrants as the influx has shifted from Eastern Europeans to people from countries like Iraq, Somalia and Afghanistan. "The rise of those numbers, as relatively small as they are, have gathered just enough attention to set off a small reaction from people who are genuinely uncomfortable with the diversity around them," Egmont said.

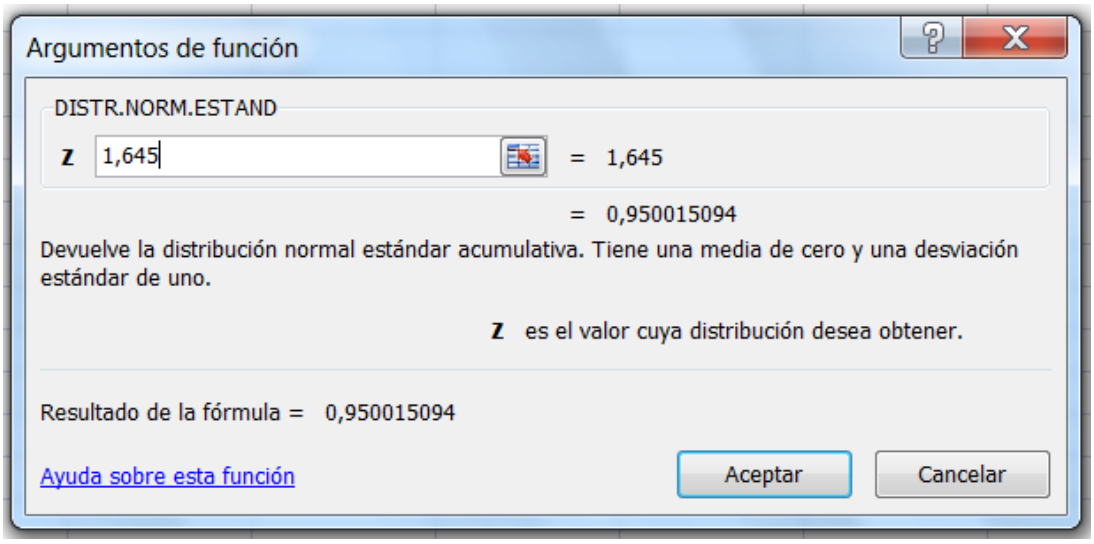
Most Americans, however, don't think the country should show a preference for Christian refugees, as Trump has suggested. Some 56 percent, including 72 percent of Democrats and 45 percent of Republicans, disagreed that the country should "welcome Christian refugees, but not Muslim ones."

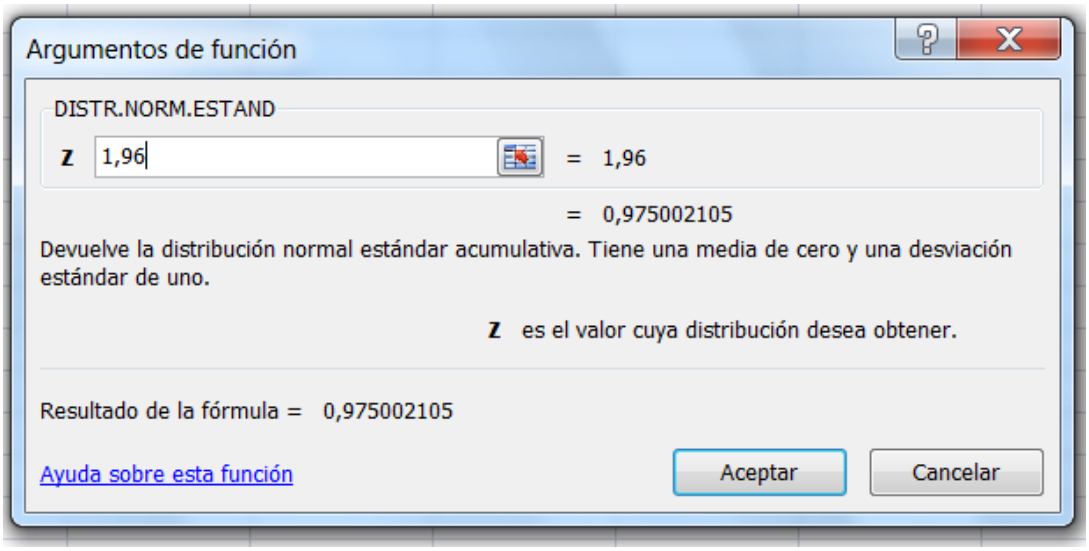
The Reuters/Ipsos poll was conducted online in English in all 50 states. It gathered poll responses from 1,201 people including 453 Democrats and 478 Republicans.

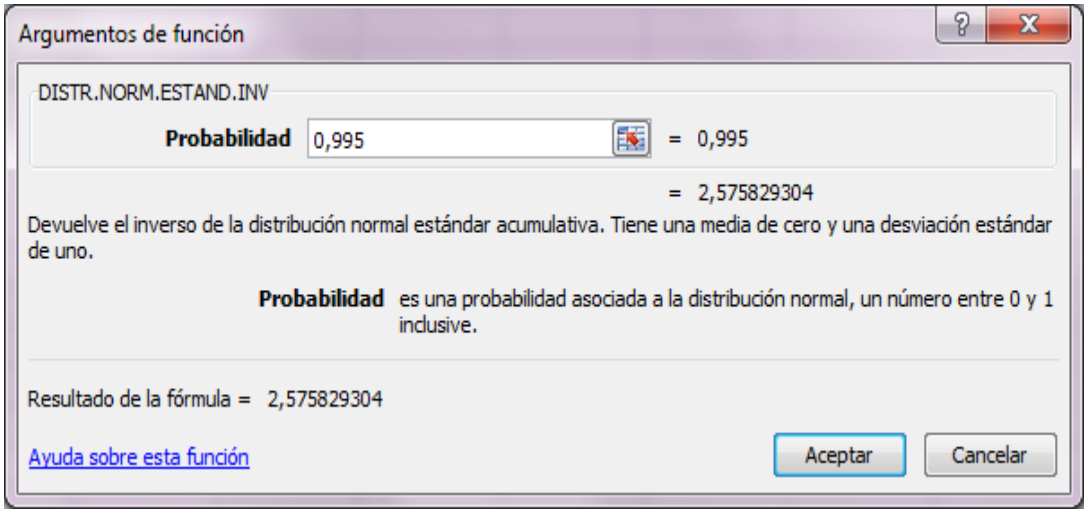
(a) Calculate 95% confidence intervals for the true proportions of Democrats and Republicans who disagree that the US should welcome Christian refugees but not Muslims. Looking at the results, does it seem reasonable to assume that the probability that an American does not think the US should show a preference for Christian referees does not depend on the political party they support? Explain your answer. (2.5 points)

(b) The headline suggests that a third of Americans think that the travel ban would make them safer. Is there any evidence that the true percentage is lower than this? Carry out a hypothesis test at a 5% significance level and briefly comment the results. (1.5 points)

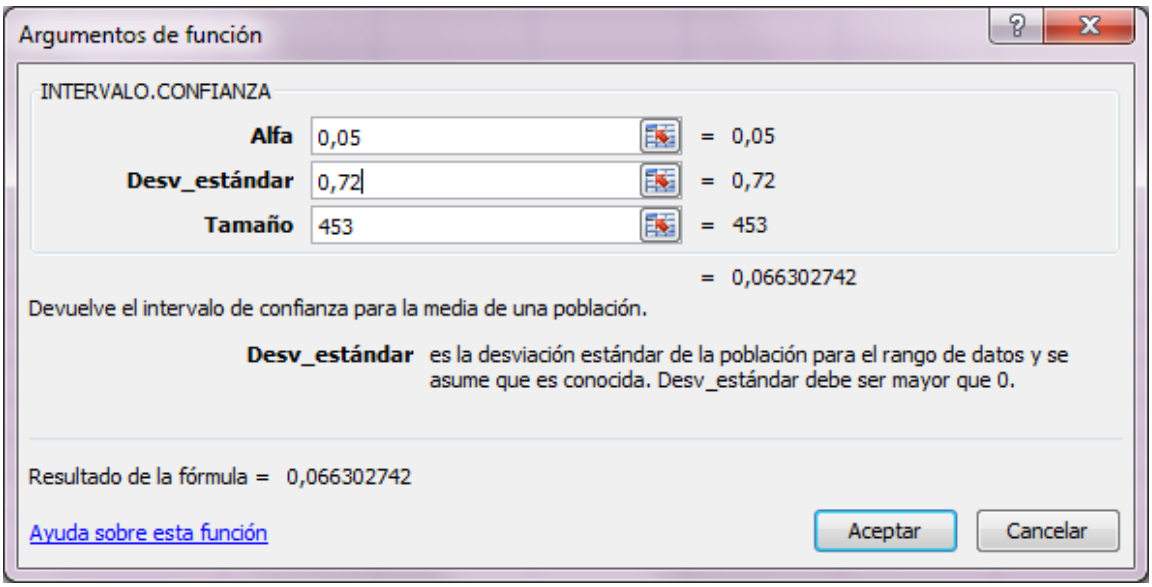
ANNEX 1: Excel screen shots: percentiles of the standard normal distribution

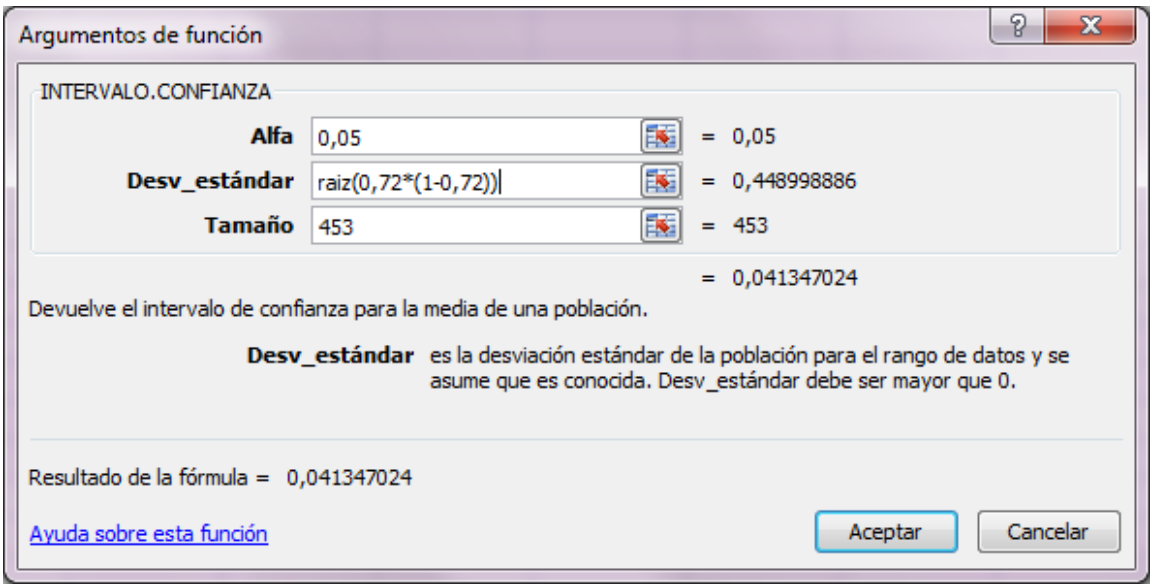


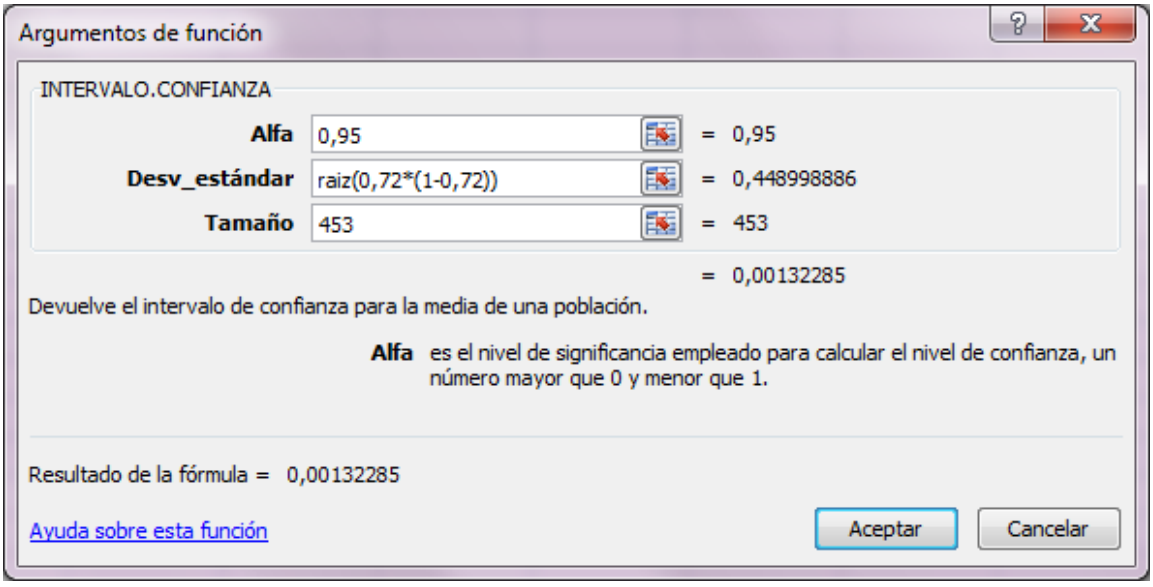


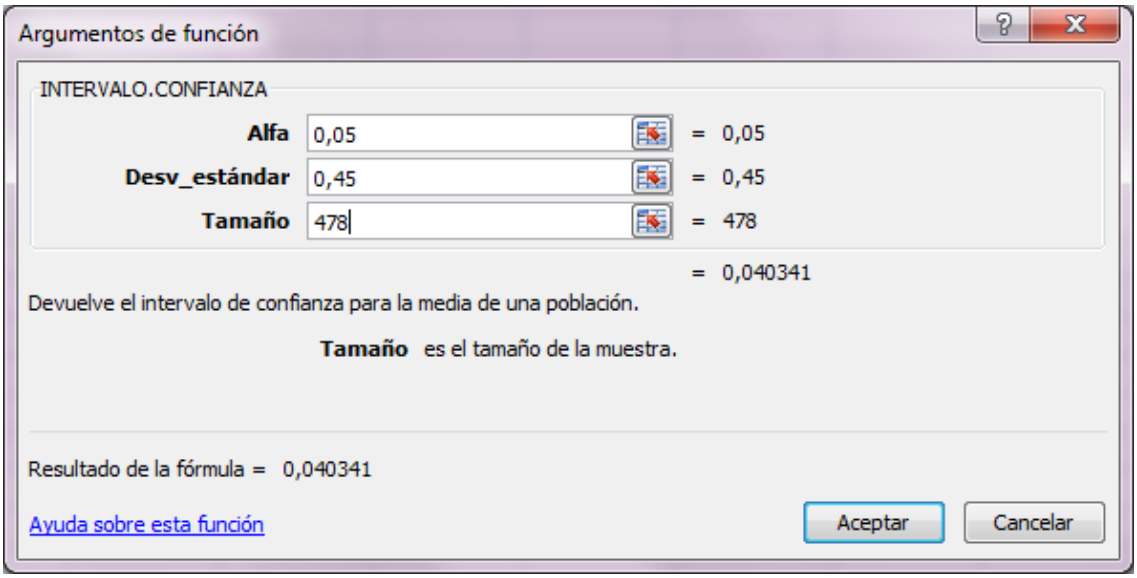


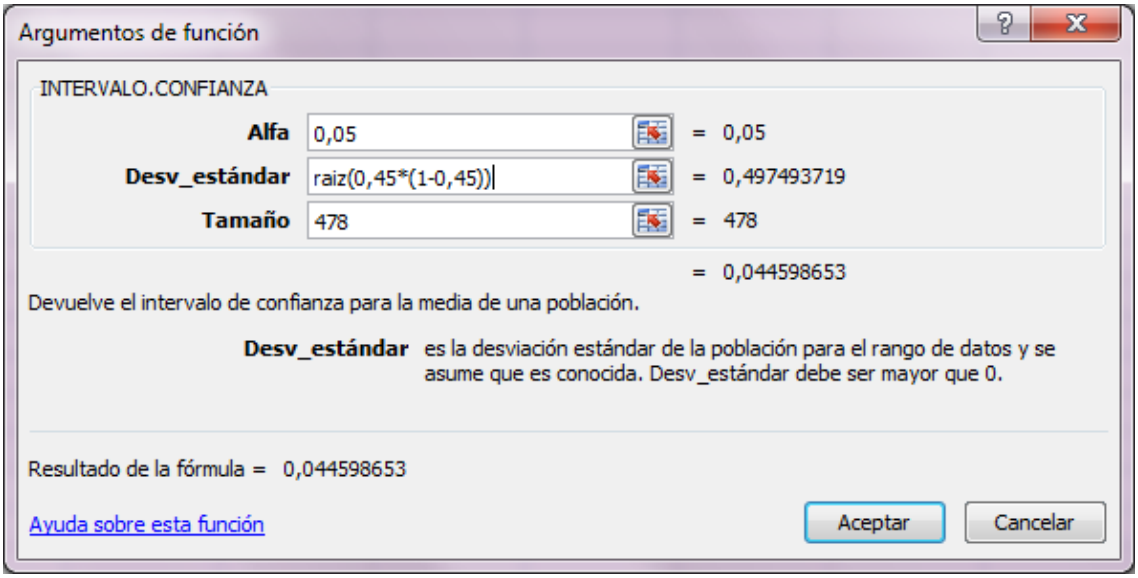
ANNEX 2: Excel screen shots: confidence intervals

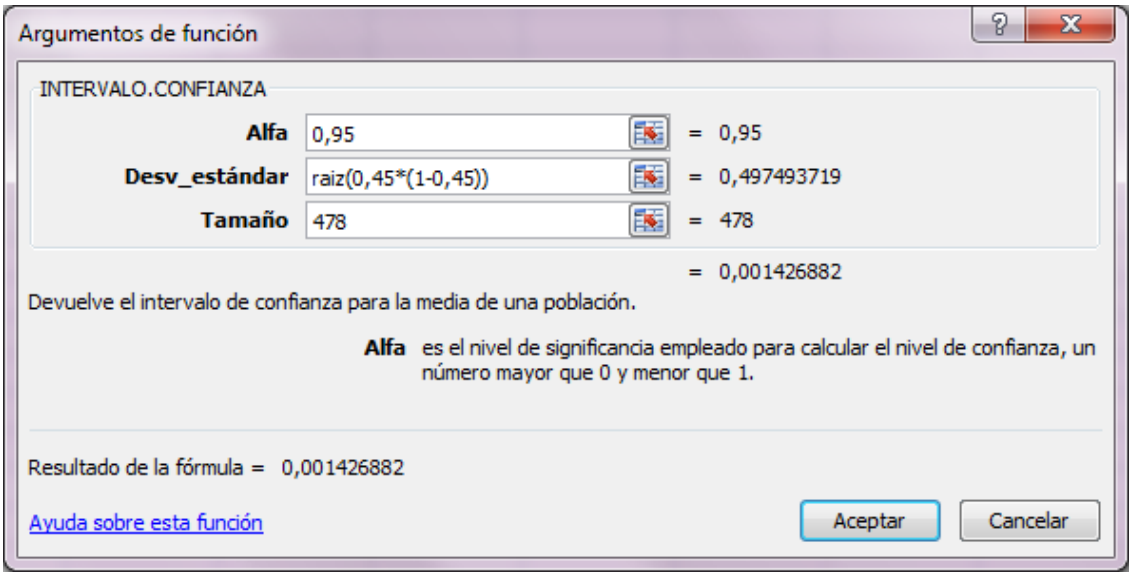







Argumentos de función
INTERVALO.CONFIANZA
Alfa 0,05 = 0,05
Desv_estándar 0,45 = 0,45
Tamaño 478 = 478
= 0,040341
Devuelve el intervalo de confianza para la media de una población.
Tamaño es el tamaño de la muestra.
Resultado de la fórmula = 0,040341
Ayuda sobre esta función
Aceptar
Cancelar


Argumentos de función
INTERVALO.CONFIANZA
Alfa 0,05 = 0,05
Desv_estándar raiz(0,45*(1-0,45)) = 0,497493719
Tamaño 478 = 478
= 0,044598653
Devuelve el intervalo de confianza para la media de una población.
Desv_estándar es la desviación estándar de la población para el rango de datos y se asume que es conocida. Desv_estándar debe ser mayor que 0.
Resultado de la fórmula = 0,044598653
Ayuda sobre esta función
Aceptar
Cancelar


Argumentos de función
INTERVALO.CONFIANZA
Alfa 0,95 = 0,95
Desv_estándar raiz(0,45*(1-0,45)) = 0,497493719
Tamaño 478 = 478
= 0,001426882
Devuelve el intervalo de confianza para la media de una población.
Alfa es el nivel de significancia empleado para calcular el nivel de confianza, un número mayor que 0 y menor que 1.
Resultado de la fórmula = 0,001426882
Ayuda sobre esta función
Aceptar
Cancelar