# CALAMITY AND THEIR EFFECT ON TOURISM

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**DISASTERS SURVEYED:-**

1.) Kedarnath (Floods)
2.) Odisha (Cyclone
3.) Kashmir (Floods)

**OBJECTIVE:-**

**Analyzing the effect of a disaster on a tourist place by conducting a paired t-test on before and after disaster data of the tourist place**

# KEDARNATH FLASH FLOODS

Kedarnath temple after floods

**LOCATION:-** Uttarakhand

**DATE AND TIME:-** 16th June 2013 around 7:30pm.

**PLACES AFFECTED:-** 5 Districts of Uttarakhand

**TOURIST ATTRACTION:-** Kedarnath Temple

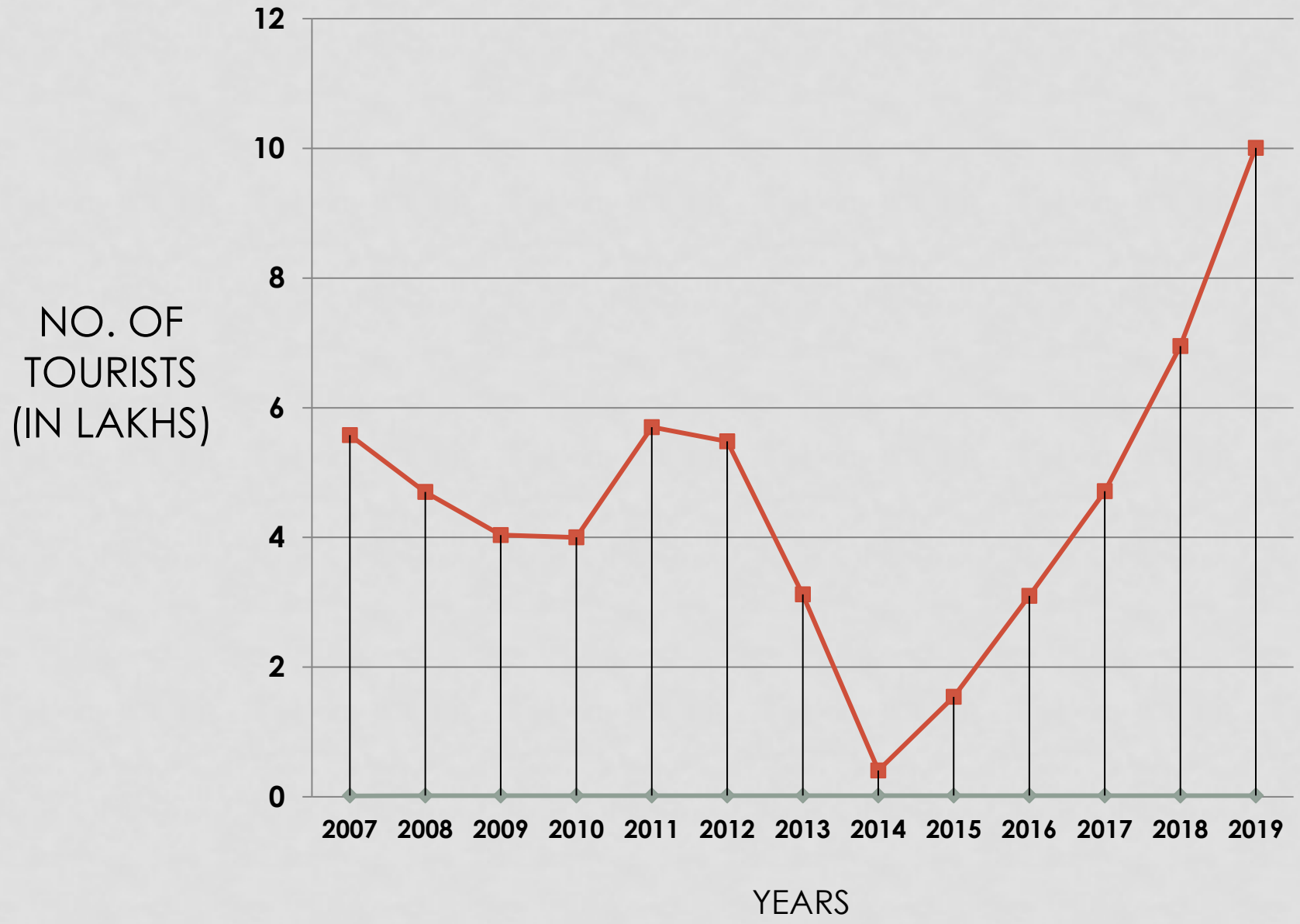
**CAUSE:-** Heavy rainfall causing flash flood and landslides, sudden rapid melting of snow on the Kedarnath mountain.

**EFFECTS:-** 5000 deaths, 236 injured, 4021 people missing in flash flood

Landslide at Kedarnath shrine

| YEAR | NO. OF VISITORS | AVERAGE NO. OF TOURISTS |
|---|---|---|
| 2007 | 557,923 | Before 2013 |
| 2008 | 470,048 | |
| 2009 | 403,636 | |
| 2010 | 400,014 | **491,631** |
| 2011 | 570,000 | |
| 2012 | 548,166 | |
| **2013** | **312,201** | ***flash flood occurrence*** |
| 2014 | 40,832 | After 2013 |
| 2015 | 154,430 | |
| 2016 | 309,746 | **445,333** |
| 2017 | 471,235 | |
| 2018 | 694,934 | |
| 2019 | 1,000,821 | |

# Years v/s no. of Tourists



# CYCLONE (PHAILIN) IN ODISHA

Phailin affects coastline

**LOCATION:-** Near Gopalpur in Odisha

**DATE AND TIME:-** 12th October 2013 at 9pm.

**PLACES AFFECTED:-** Thailand, Myanmar, India (Odisha), Nepal.

**TOURIST ATTRACTION:-** Konark temple, Jagannath Temple, Chilka Lake etc.

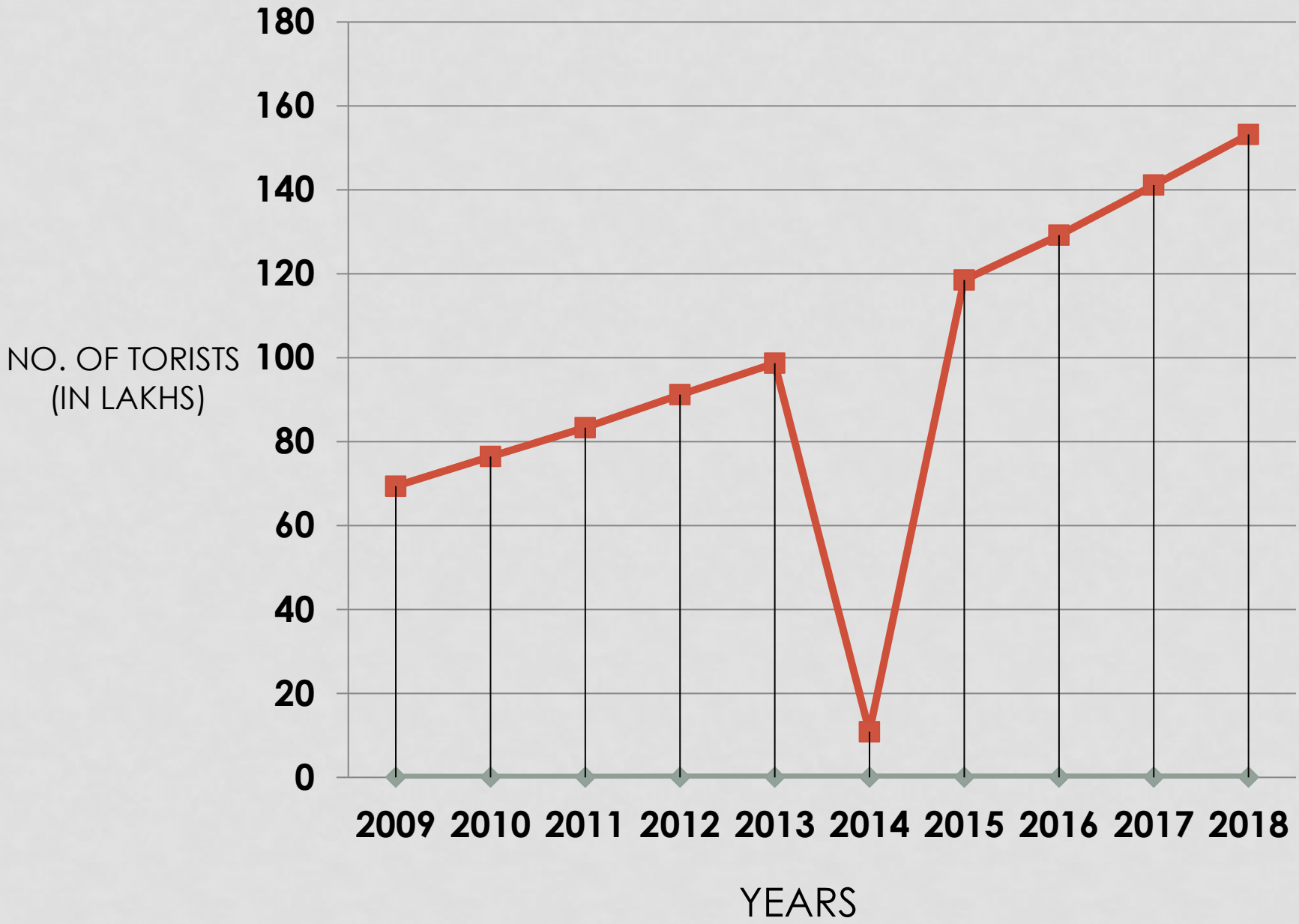
**CAUSE:-** unprecedented wind velocity of up to 220 kmph followed by torrential rains .

Phailin destroys houses

**EFFECTS:-** toppled trees and power lines along 250 miles of Andhra Pradesh and Odisha coastlines, killed 23 people and affected about 9 million residents.

| Year | NO OF TOURIST | AVERAGE NO. OF TOURISTS |
|---|---|---|
| 2009 | 6,937,194 | Before 2013 |
| 2010 | 7,642,047 | |
| 2011 | 8,331,979 | **8,724,892** |
| 2012 | 9,117,805 | |
| 2013 | 9,866,810 | *Occurrence of cyclone Phailin* |
| 2014 | 1,086,048 | After 2013 |
| 2015 | 11,853,088 | |
| 2016 | 12,919,260 | **6,469,568** |
| 2017 | 14,111,243 | |

# YEARS v/s NO. OF TOURISTS



# KASHMIR FLOODS

Houses destroyed

**LOCATION:-** Jammu and Kashmir

**DATE AND TIME:-** September 2014

**PLACES AFFECTED:-** Jammu and Kashmir, Pakistan Territories

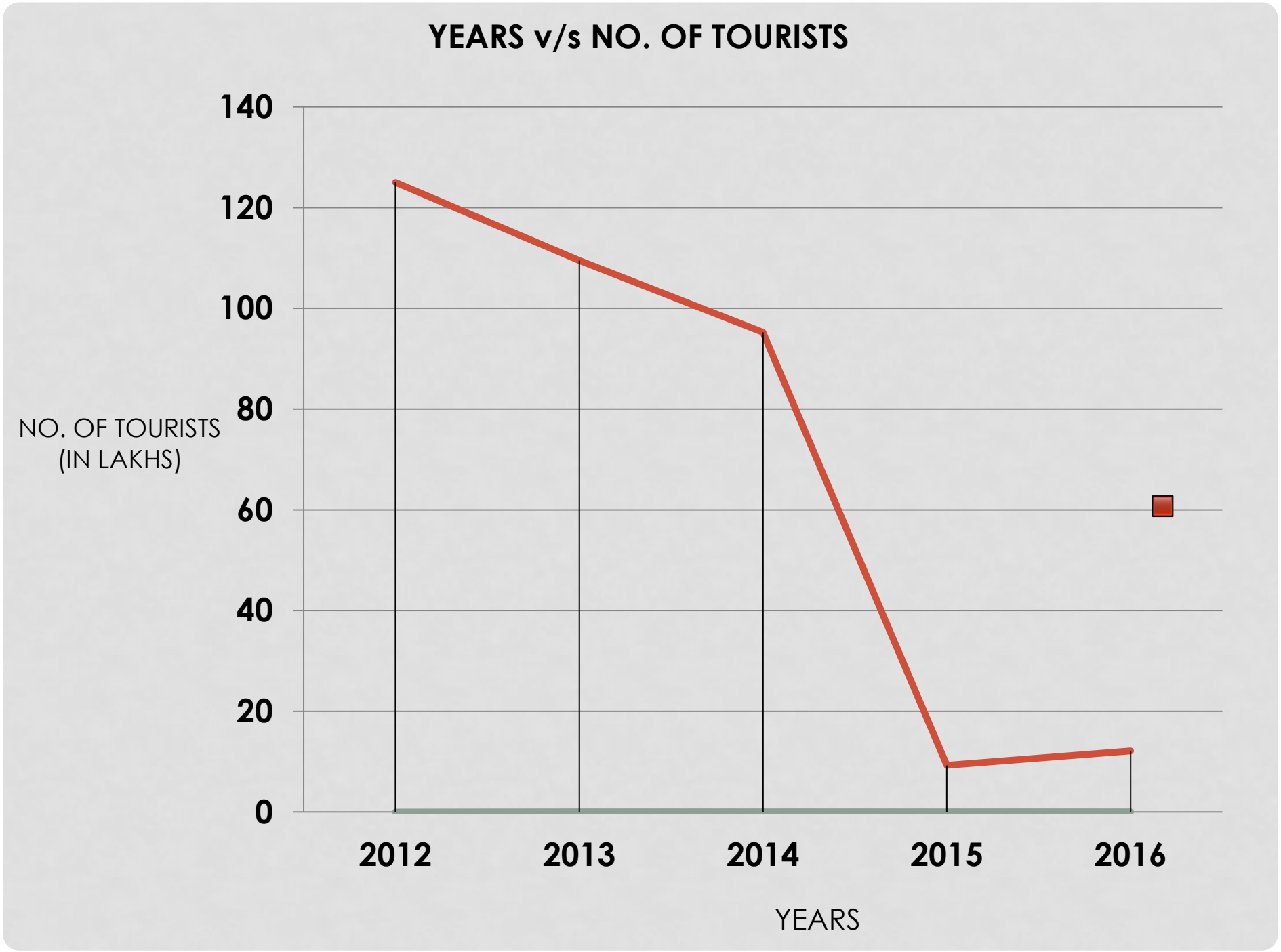
**TOURIST ATTRACTION:-** Srinagar, Kargil, Pulwama, Jama masjid.

**CAUSE:-** Torrential rainfall, unplanned urbanization, climate change and lack of preparedness

**EFFECTS**:- 277 people died, 2550 villages affected and 80,000 peoples evacuated, homes and businesses were severely damaged.

People rescuing each other

| YEAR | NO. OF VISITORS | AVERAGE NO. OF TOURISTS |
|---|---|---|
| 2012 | 12,502,515 | Before 2014 |
| 2013 | 10,950,620 | **11,726,567.50** |
| **2014** | **9,525,021** | ***occurrence of flood*** |
| 2015 | 927,815 | After 2014 |
| 2016 | 1,212,000 | **1,069,907.50** |


YEARS v/s NO. OF TOURISTS
140
120
100
80
60
40
20
0
NO. OF TOURISTS
(IN LAKHS)
2012
2013
2014
2015
2016
YEARS

# Paired t- test for difference of means

Hypothesis to be tested

$H_0$ : There is no change in visiting average no. of tourist visiting before and after calamity

v/s $H_1$ : Average no. of tourist visiting before calamity is less than average no. of tourist visiting after calamity

$\mu_1=\mu_2$ v/s $H_1:\mu_1<\mu_2$

$:d=\mu_1-\mu_2=0$ $:d=\mu_1=\mu_2<0$

Let di=

Test st

$$t = \frac{\bar{d} - 0}{s_d / \sqrt{n}} \text{-1}$$

| PLACES | AVERAGE NO. OF TOURIST BEEFORE CALAMITY | AVERAGE NO. OF TOURIST AFTER CALAMITY |
|---|---|---|
| Kedarnath | 559,083 | 97,631 |
| Kashmir | 11,726,568 | 1,069,908 |
| Odisha | 8,724,892 | 6,469,568 |

| t-Test: Paired Two Sample for Means | | |
|---|---|---|
| | Variable 1 | Variable 2 |
| Mean | 7003514.167 | 2545702.167 |
| Variance | 3.34005E+13 | 1.17839E+13 |
| Observations | 3 | 3 |
| df | 2 | |
| t Stat | 1.418607096 | |
| P(T<=t) one-tail | 0.145898695 | |
| t Critical one-tail | 2.91998558 | |

The p-value for the test,
p value < **α** = 0.05
Therefore, we do not reject H0
i.e. Average no. of tourist visiting before and after calamity is equal

Bibliography: http://ijrcm.org.in/
https://www.sacredyatra.com/kedarnath-pilgrim-stats.html