

??????

- ???????
- ?????

???????

???

[?????.PNG](#)

???

- ???

```
[  
 {year: 1884,change: -0.28},  
 {year: 1885,change: -0.32},  
 {year: 1886,change: -0.31},  
 {year: 1887,change: -0.33},  
 {year: 1888,change: -0.2},  
 {year: 1889,change: -0.12},  
 {year: 1890,change: -0.37},  
 {year: 1891,change: -0.24},  
 {year: 1892,change: -0.27},  
 {year: 1893,change: -0.3},  
 {year: 1894,change: -0.31},  
 {year: 1895,change: -0.21},  
 {year: 1896,change: -0.15},  
 {year: 1897,change: -0.11},  
 {year: 1898,change: -0.28},  
 {year: 1899,change: -0.16},  
 {year: 1900,change: -0.09},  
 {year: 1901,change: -0.15},  
 {year: 1902,change: -0.27},  
 {year: 1903,change: -0.35},  
 {year: 1904,change: -0.44},  
 {year: 1905,change: -0.28},  
 {year: 1906,change: -0.23},  
 {year: 1907,change: -0.4},
```

```
{year: 1908,change: -0.43},  
{year: 1909,change: -0.47},  
{year: 1910,change: -0.42},  
{year: 1911,change: -0.44},  
{year: 1912,change: -0.35},  
{year: 1913,change: -0.34},  
{year: 1914,change: -0.16},  
{year: 1915,change: -0.11},  
{year: 1916,change: -0.34},  
{year: 1917,change: -0.4},  
{year: 1918,change: -0.26},  
{year: 1919,change: -0.22},  
{year: 1920,change: -0.27},  
{year: 1921,change: -0.21},  
{year: 1922,change: -0.28},  
{year: 1923,change: -0.24},  
{year: 1924,change: -0.28},  
{year: 1925,change: -0.21},  
{year: 1926,change: -0.1},  
{year: 1927,change: -0.21},  
{year: 1928,change: -0.21},  
{year: 1929,change: -0.36},  
{year: 1930,change: -0.15},  
{year: 1931,change: -0.09},  
{year: 1932,change: -0.17},  
{year: 1933,change: -0.28},  
{year: 1934,change: -0.14},  
{year: 1935,change: -0.2},  
{year: 1936,change: -0.15},  
{year: 1937,change: -0.03},  
{year: 1938,change: -0.03},  
{year: 1939,change: -0.03},  
{year: 1940,change: 0.08},  
{year: 1941,change: 0.12},  
{year: 1942,change: 0.09},  
{year: 1943,change: 0.13},  
{year: 1944,change: 0.25},  
{year: 1945,change: 0.12},  
{year: 1946,change: -0.04},  
{year: 1947,change: -0.05},
```

```
{year: 1948,change: -0.09},  
{year: 1949,change: -0.09},  
{year: 1950,change: -0.18},  
{year: 1951,change: -0.07},  
{year: 1952,change: 0.01},  
{year: 1953,change: 0.08},  
{year: 1954,change: -0.13},  
{year: 1955,change: -0.15},  
{year: 1956,change: -0.2},  
{year: 1957,change: 0.04},  
{year: 1958,change: 0.07},  
{year: 1959,change: 0.03},  
{year: 1960,change: -0.02},  
{year: 1961,change: 0.05},  
{year: 1962,change: 0.03},  
{year: 1963,change: 0.06},  
{year: 1964,change: -0.2},  
{year: 1965,change: -0.1},  
{year: 1966,change: -0.05},  
{year: 1967,change: -0.02},  
{year: 1968,change: -0.07},  
{year: 1969,change: 0.07},  
{year: 1970,change: 0.02},  
{year: 1971,change: -0.09},  
{year: 1972,change: 0.01},  
{year: 1973,change: 0.15},  
{year: 1974,change: -0.07},  
{year: 1975,change: -0.02},  
{year: 1976,change: -0.11},  
{year: 1977,change: 0.18},  
{year: 1978,change: 0.07},  
{year: 1979,change: 0.17},  
{year: 1980,change: 0.27},  
{year: 1981,change: 0.33},  
{year: 1982,change: 0.13},  
{year: 1983,change: 0.3},  
{year: 1984,change: 0.15},  
{year: 1985,change: 0.12},  
{year: 1986,change: 0.19},  
{year: 1987,change: 0.33},
```

```
{year: 1988,change: 0.41,},  
{year: 1989,change: 0.28,},  
{year: 1990,change: 0.44,},  
{year: 1991,change: 0.43,},  
{year: 1992,change: 0.23,},  
{year: 1993,change: 0.24,},  
{year: 1994,change: 0.32,},  
{year: 1995,change: 0.46,},  
{year: 1996,change: 0.35,},  
{year: 1997,change: 0.48,},  
{year: 1998,change: 0.64,},  
{year: 1999,change: 0.42,},  
{year: 2000,change: 0.42,},  
{year: 2001,change: 0.55,},  
{year: 2002,change: 0.63,},  
{year: 2003,change: 0.62,},  
{year: 2004,change: 0.55,},  
{year: 2005,change: 0.69,},  
{year: 2006,change: 0.63,},  
{year: 2007,change: 0.66,},  
{year: 2008,change: 0.54,},  
{year: 2009,change: 0.64,},  
{year: 2010,change: 0.71,},  
{year: 2011,change: 0.6,},  
{year: 2012,change: 0.63,},  
{year: 2013,change: 0.65,},  
{year: 2014,change: 0.74,},  
{year: 2015,change: 0.87,},  
{year: 2016,change: 0.99,},  
]
```

• ??

40, 40, 60, 60

• ? Geom

???line?

??	??
??	year*change
??	??
??	smooth

????area?

??	??
??	year*change
??	???
??	#ffffff

- ???? RegionFilter

?????- ? (#FF4D4F)

??	??
??????	??
?????	min,max
????	max,0
??	#FF4D4F

?????- ? (#18a1cd)

??	??
??????	??
?????	min,0
????	max,min
??	#18a1cd

?????

???

[?????.PNG](#)

???

- ???

```
[  
  { time: '10:10', call: 4, waiting: 2, people: 2 },  
  { time: '10:15', call: 2, waiting: 6, people: 3 },  
  { time: '10:20', call: 13, waiting: 2, people: 5 },  
  { time: '10:25', call: 9, waiting: 9, people: 1 },  
  { time: '10:30', call: 5, waiting: 2, people: 3 },  
  { time: '10:35', call: 8, waiting: 2, people: 1 },  
  { time: '10:40', call: 13, waiting: 1, people: 2 }  
]
```

- ??

40, 50, 50

- ??? Scale

??	???
??	people
??	linear
???	0
???	5

• ??? Axis

time?X??

??	???
??	time
??	??
?? - ???? - ??	18
???? - ??	5
?? - ??	?
?? - ???? - ??	#ffffff
?? - ???? - ???	100

people?Y??

??	???
??	people
??	??
?? - ???? - ??	#fdae6b

• ? Geom

???? interval ?

??	???
??	time*waiting
??	???
??	#3182bd

???line?

??	??
??	time*people
??	??
??	#fdae6b
??	smooth
??	3

???point?

??	??
??	time*people
??	??
??	#fdae6b
??	circle
??	4