

# Sleeping hour survey of people in Windom community

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# About Windom community

Windom was platted in June 20, 1871 by A.L. Beach. The city has a total area of 4.33 sq. miles which is 4.16 sq. miles is land and 0.17 sq. miles is water. Now, there are 4,876 people live in Windom community and 1994 households.



# Pictures of Windom community



# Procedure

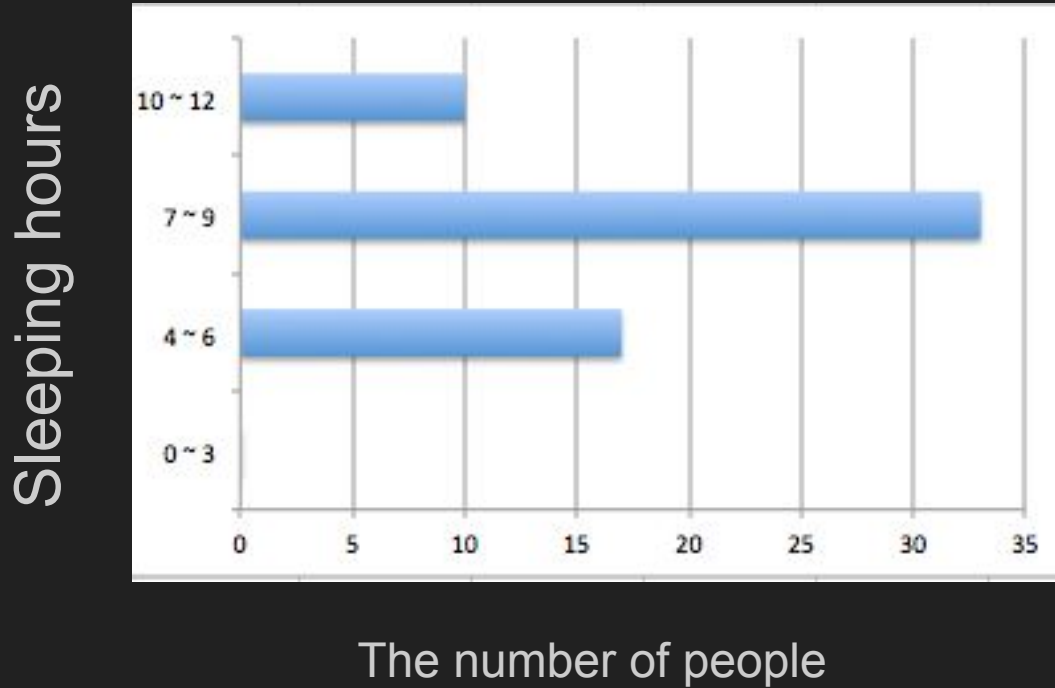
I want to know how many hours that people in Windom community usually sleep because the community is located close to the airport and also fire station. So, my curiosity is those things disturb their sleeping time or not.

- I'll randomly ask 60 people in Windom by going to each houses and knock the door plus talking with people that joining the community activity on that day.
- I'll test the average of sleeping hours that people usually have and see that the airport and fire station affects their ability to sleep or not.

# Data

- 7.5
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  - 5.5
  - 5.5
  - 7
  - 7
  - 7
  - 8
  - 5
  - 9
- 10
  - 7
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  - 10
  - 4.5
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  - 7.5
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  - 10
  - 7
  - 7
  - 5.5

# Graph



# One sample t interval

P: The mean of sleeping hour of all people who live in Windom community.

A: Random: the sample is randomly selected.

Normal:  $CLT( n \geq 30 ) = 60 \geq 30$

Independent: 10% condition =  $n \leq 1/10N$

$$60 \times 10 \leq N$$

$$600 \leq N$$

It's safe to assume that there are at least 600 people in the community.

# One sample t interval

N: since  $\sigma$  is unknown, we will use an one sample t interval.

I: Construct 80% confident

$$\bar{x} \pm t * \left( \frac{s}{\sqrt{n}} \right)$$
$$7.41 \pm 1.2961 \left( \frac{1.786227126}{60} \right)$$
$$DF = 60 - 1 = 59$$
$$(7.371414517, 7.448585483)$$

t Table upper-tail probability:

df	.25	.10	.05	.025	.01	.005
51	0.6793	1.2984	1.6753	2.0076	2.4017	2.6757
52	0.6792	1.2980	1.6747	2.0066	2.4002	2.6737
53	0.6791	1.2977	1.6741	2.0057	2.3988	2.6718
54	0.6791	1.2974	1.6736	2.0049	2.3974	2.6700
55	0.6790	1.2971	1.6730	2.0040	2.3961	2.6682
56	0.6789	1.2969	1.6725	2.0032	2.3948	2.6665
57	0.6788	1.2966	1.6720	2.0025	2.3936	2.6649
58	0.6787	1.2963	1.6716	2.0017	2.3924	2.6633
59	0.6787	1.2961	1.6711	2.0010	2.3912	2.6618



# One sample t interval

C: We are 80% confident that the interval from 7.371414517 to 7.448585483 hours captures the mean average of sleeping hour of all people in Windom community.

# Final conclusion

- It seems like the airport and fire station are not disturbing people's the ability to sleep because the survey shows that no one in the community cannot sleep during the night.
- If I have to do the survey next time, I will wait until they have an annual meeting because in that day, everyone in the community will come. So, it will be easier to survey people.
- I didn't have any problem about doing the survey because every people I asked they welcome to give the answer. The reason is everyone in the community knows each other pretty much plus they have a meeting very often so people always keep in touch.