Fighting shadows

Los Alamos, New mexico

super computing challenge

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Team

New futures highschool

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Navigating Homelessness, Abuse, and Addiction Among New Mexico's Youth

Executive Summary

The problem we investigated was how different factors can affect the youth and how it creates a probability of them becoming homeless. To learn more about this problem we did some research on what positive factors and negative factors can affect the youth in New Mexico and what the numbers are. To model this problem in netlogo we had 6 different sliders so you could control the different factors and depending on the risk level the turtles would be green, yellow, or red. Our model showed how having certain factors can affect the youth. Our model showed the turtles interacting with each other getting influenced, turning either green, red, or yellow. Green being healthy, good living situation,and sober, red is homeless, unhealthy,using drugs and at their breaking point, yellow is in the middle of green and red and is at risk. When yellow interacts with green turtles causing a positive impact there's a chance of turning back green, And when yellow interacts with red they have a negative impact causing a probability of turning red.

Statement of the problem

The problem is how certain things can lead the youth of New Mexico into homelessness to a point they lose their life.

It is important because homelessness is such a serious problem that New Mexico struggles especially with the youth.

Some facts about the situation is that New Mexico has one of the highest youth homelessness rates in the country. Many teens become homeless due to family conflict, abuse, or substance use. Studies show that youth who experience abuse or addiction are much more likely to struggle with housing instability.

Method description

Our netlogo was based on how different types of factors can affect the youth of New Mexico and how these factors can lead to teen homelessness and drug addiction.

We changed the amount of factors because it would be too much to add

We added three different colors because it helps us differentiate between the affected turtles, at risk turtles, and normal turtles.

Verification of model

The model works well when the positive factors and negative factors sliders are low.

The model does not work well when both factor sliders are in the middle.

The model matches the research by having the turtles that stay red for a long time before they die.

The model does not match the research by not having more different factors like race, poverty, single parent households, child that have PTSD and many more as well with positive factors.

Results Of The Model

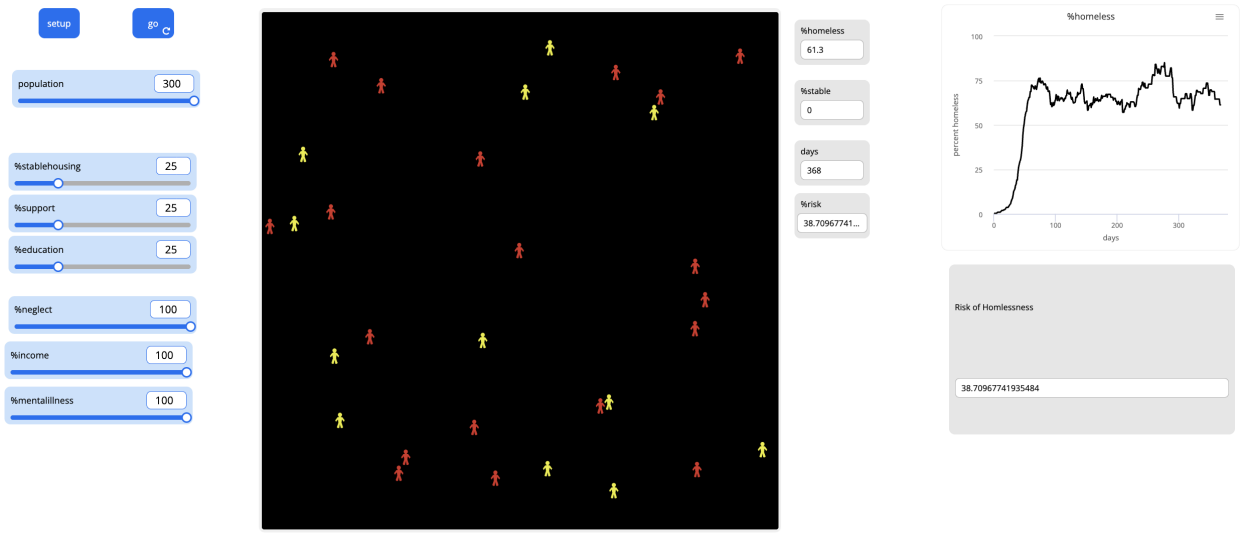
Our model shows turtles (people), and how different influential factors, including interactions with each other, influence their livelihood.

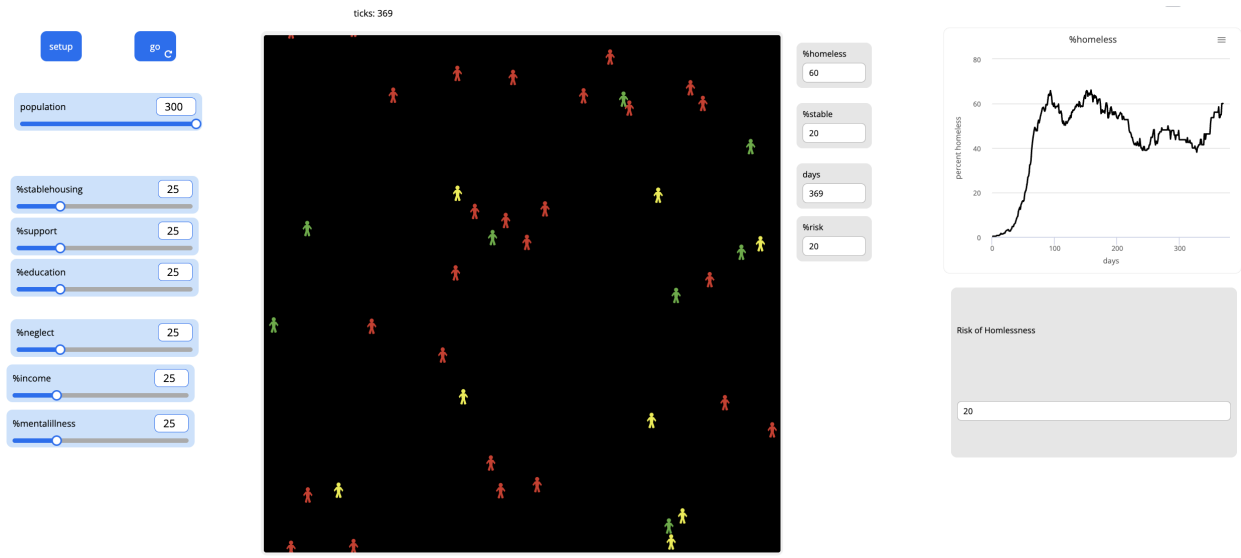
When the negative slider is between low and high, the model shows that more turtles begin turning yellow and red over time. This represents more youth becoming at risk or homeless as negative influences increase. When positive factors are higher, more turtles stay green or return to green.

Conclusions

The model shows that when negative factors like abuse and drug use increase, more youth are likely to become homeless or at risk. In the real world, this means that support systems and positive influences are very important in preventing homelessness. It also shows that people can be influenced by those around them, which highlights the importance of community and support.

Software, Tables, Graphs





setup

go

population 300

%stablehousing 50

%support 50

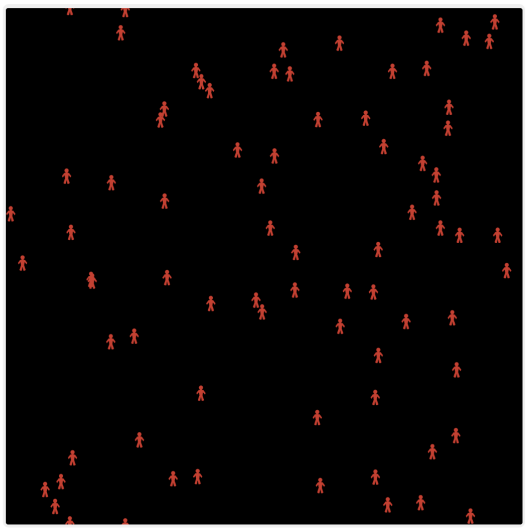
%education 50

%neglect 100

%income 100

%mentalillness 100

ticks: 133

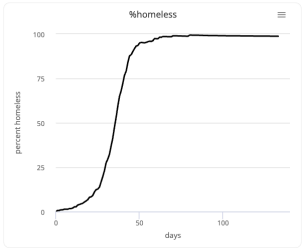


%homeless 100

%stable 1.298701298...

days 133

%risk 0



Risk of Homlessness

0

setup

go

population 300

%stablehousing 100

%support 100

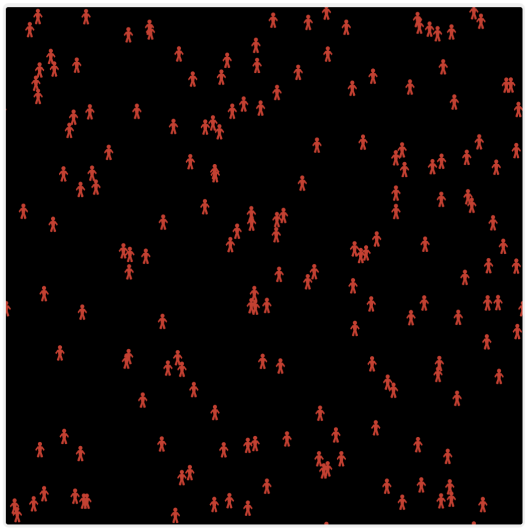
%education 100

%neglect 50

%income 50

%mentalillness 50

ticks: 74

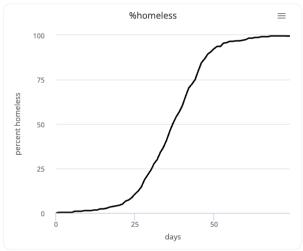


%homeless 100

%stable 0.540540540...

days 74

%risk 0



Risk of Homlessness

0

setup

go

population 300

%stablehousing 50

%support 50

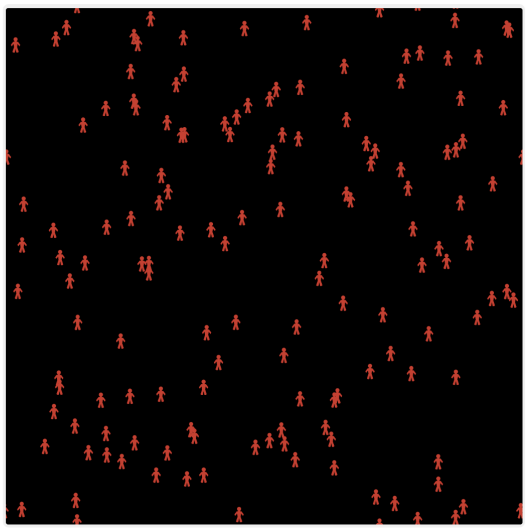
%education 50

%neglect 50

%income 50

%mentalillness 50

ticks: 89

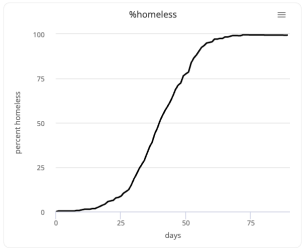


%homeless 100

%stable 0.680272108...

days 89

%risk 0



Risk of Homlessness

0

setup

go

population 300

%stablehousing 25

%support 25

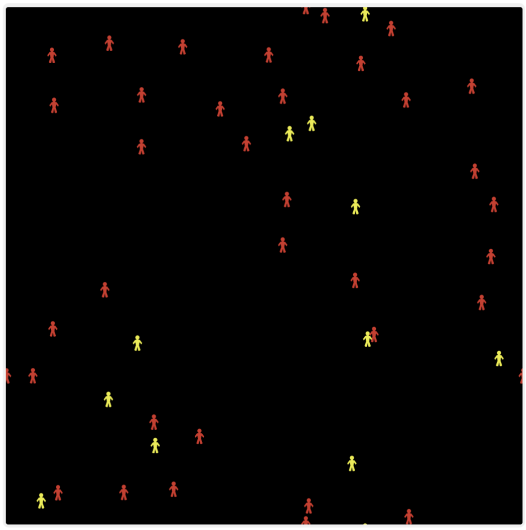
%education 25

%neglect 50

%income 50

%mentalillness 50

ticks: 378

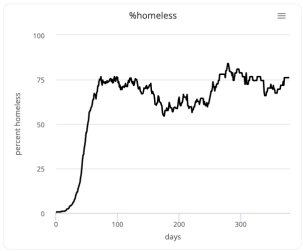


%homeless 76.1

%stable 0

days 378

%risk 23.91304347...



Risk of Homlessness

23.913043478260867

setup

go

population 300

%stablehousing 50

%support 50

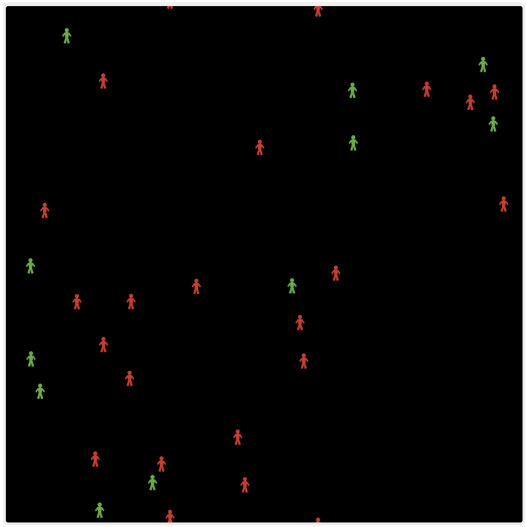
%education 50

%neglect 25

%income 25

%mentalillness 25

ticks: 368

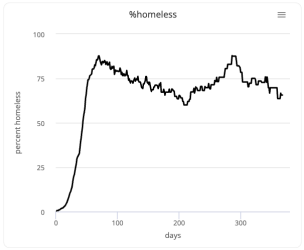


%homeless
65.6

%stable
34.375

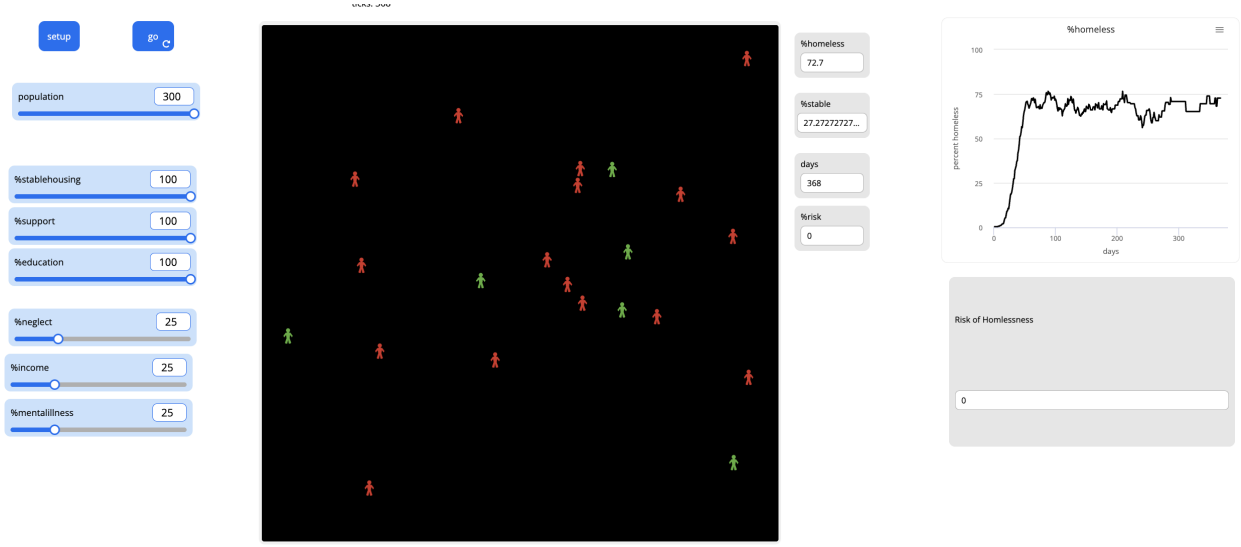
days
368

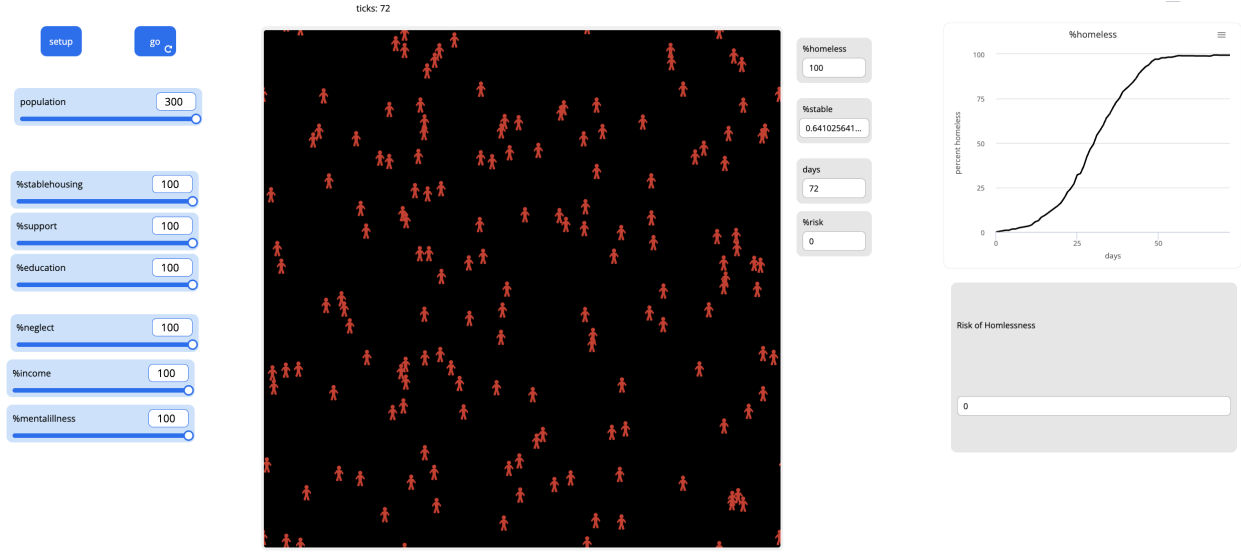
%risk
0



Risk of Homlessness

0





Here is the code:

```
globals [%infected %risk %stable]

turtles-own [energy]

to setup
  clear-all
  reset-ticks
  create-turtles population
```

```
  [
    setxy random-xcor random-ycor
    set shape "person"
    set color green
    set energy 10
  ]
  ask turtle 1 [set color red]
  set %infected (count turtles with [color = red] / count turtles) * 100
end

to go
  ask turtles
  [rt random 100 lt random 100 fd 1]
  ask turtles with [color = red]
  [

    ask other turtles-here [if random 100  < (((%stablehousing / 100) + (%support / 100) +
(%education / 100) * 100))
      [set color green]]
    ask other turtles-here [if random 100 < (((%neglect / 100) + (%income / 100) +
(%mentalillness / 100)) * 100)
      [set color red]]
    ask other turtles-here [if random 100  > (((%stablehousing / 100) + (%support / 100) +
(%education / 100)) * 100)
```

```
      [ set color yellow]]
]


  ask turtles [ ask other turtles-here [if color = red [ set energy energy - 1 ] ]
    if energy = 0 [ die ]]
set %infected (count turtles with [color = red] / count turtles) * 100
    if %infected = 100 [stop]
  set %risk (count turtles with [color =  yellow] / count turtles) * 100
  set %stable (count turtles with [color = green] / count turtles) * 100
  tick
end
```

References

Where did you learn the information and coding?

We learned our information from doing a ton of research. Nadia wrote a whole essay about teens becoming homeless. This project is super important to us because everyday we see very young people out on the streets struggling to get the help they need. We had watch and mess around with our teachers models and apply some of the coding to our model to help better reach our goal of our model

Acknowledgements

What people and organizations helped you with the project?

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Jonice Webb PhD. “The 2 Types of Childhood Emotional Neglect: Active and Passive.” *Psych Central*, 30 Sept. 2018, psychcentral.com/blog/childhood-neglect/2018/09/the-2-types-of-childhood-emotional-neglect-active-and-passive#4. Accessed 18 Dec. 2025.

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Vera-Gray, Fiona. “The Impacts of Child Sexual Abuse.” *CSA Centre*, Mar. 2023, www.csacentre.org.uk/research-resources/key-messages/impacts-of-child-sexual-abuse/.

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Base model Scott Garrigan
Netlogo