U.S. trends in self-rated physical & mental health

A time series analysis

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Field: Health research

Topic: Self-rated health

Self-rated health

What is it?

Self-rated health refers the question in which participants assess different dimensions of their own health; it is commonly used in health research.

Example

On a scale from 1-5, how would you rate your physical (or mental) health?

1. Poor
2. Fair
3. Good
4. Very Good
5. Excellent

Why is it important?

Relevance

Relevance: Mortality | Relevance: Education | Relevance: Income | Relevance: Race

Article | Open Access | Published: 17 March 2020

Self-reported health as a predictor of mortality: A cohort study of its relation to other health measurements and observation time

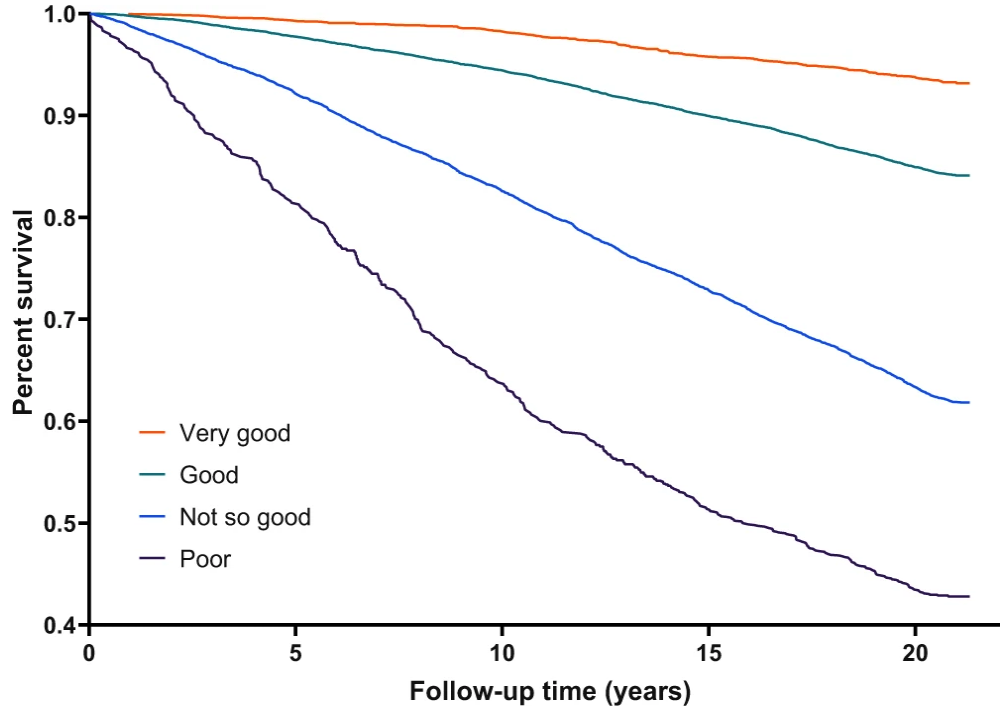
Geir Lorem, Sarah Cook, David A. Leon, Nina Emaus & Henrik Schirmer

Scientific Reports **10**, Article number: 4886 (2020) | Cite this article

3059 Accesses | **25** Citations | **22** Altmetric | Metrics

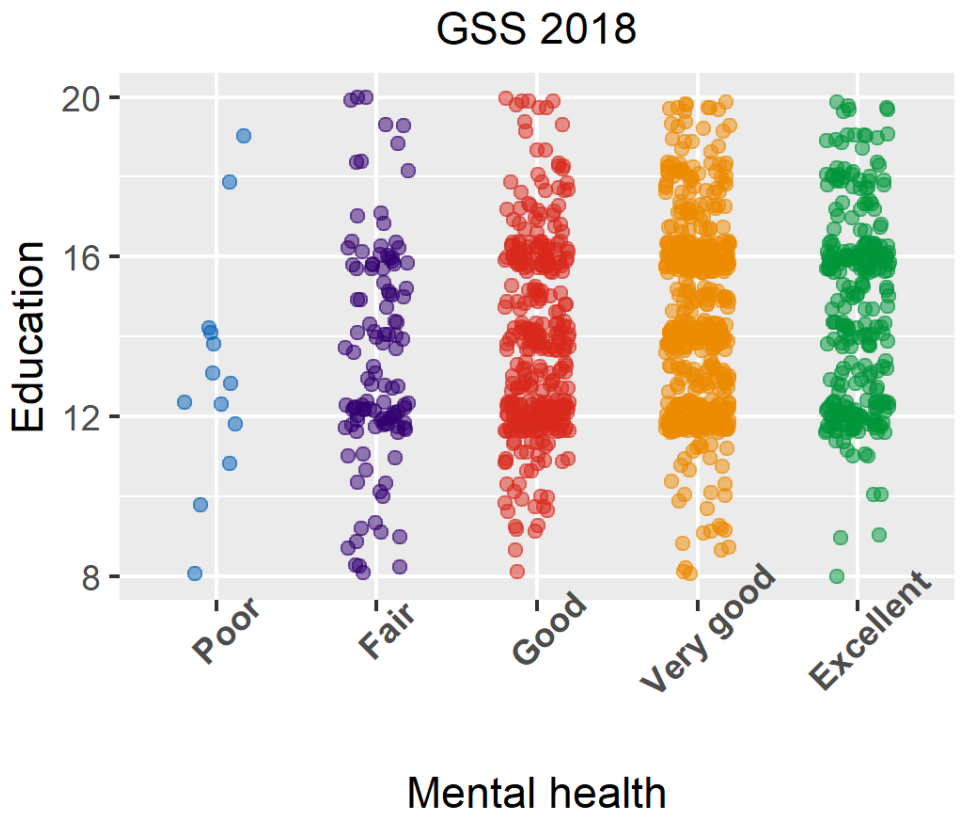
Abstract

Self-reported health (SRH) is widely used as an epidemiological instrument given the changes in public health since its introduction in the 1980s. We examined the association between SRH and mortality and how this is affected by time and health measurements in a prospective cohort study using repeated measurements and physical examinations of 11652 men and 12684 women in Tromsø, Norway. We used Cox proportional hazard regression to estimate hazard ratios (HRs) of death for SRH, controlling for pathology, biometrics, smoking, sex and age. SRH predicted mortality independently of other, more objective health measures. Higher SRH was strongly associated with lower mortality risk. Poor SRH had HR 2.51 (CI: 2.19, 2.88).



Relevance

Relevance: Mortality | **Relevance: Education** | Relevance: Income | Relevance: Race

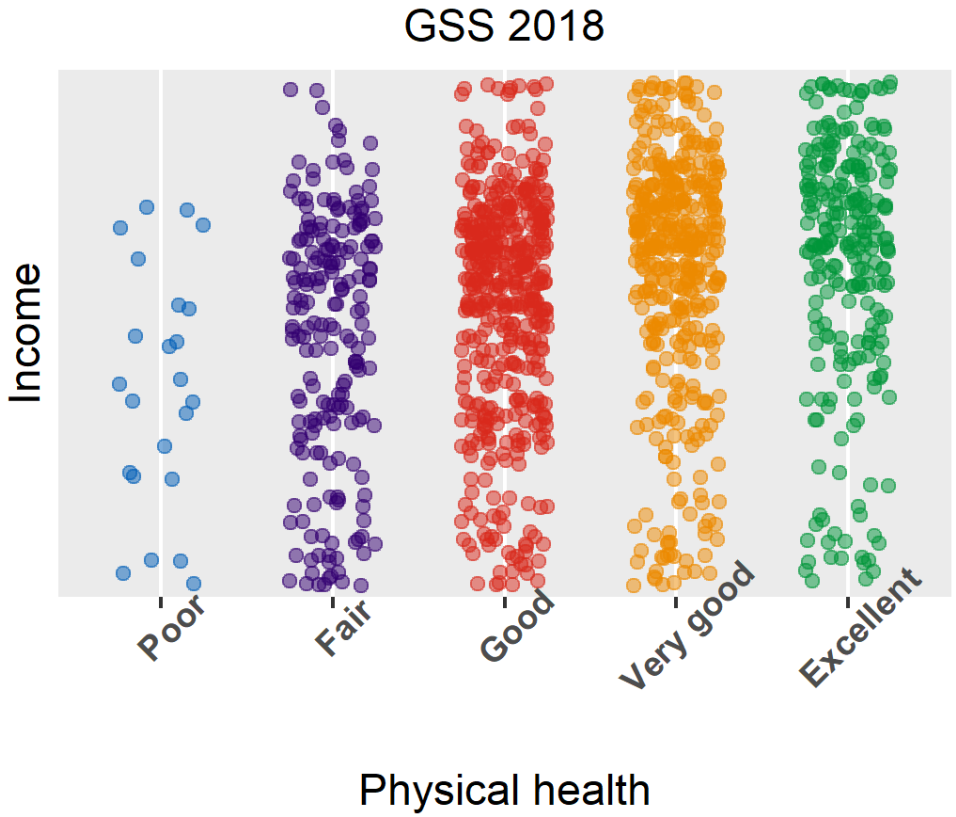


Correlation: Education ~ Mental Health

estimate	statistic	p.value	parameter	conf.low	conf.high
0.19	6.95	0	1348	0.13	0.24

Relevance

Relevance: Mortality | Relevance: Education | **Relevance: Income** | Relevance: Race



Correlation: Income ~ Physical health

estimate	statistic	p.value	parameter	conf.low	conf.high
0.22	8.46	0	1348	0.17	0.27

Relevance

GSS 2018 Mental health by race

What's the takeaway from all that?

If you ask people to self-rate their health (poor, fair, good, etc)...

then you can "predict" things like their health, income, and even mortality

and if you can predict who is likely to have poor health, low-income, or early mortality

then we can do something beforehand to prevent it!!!!

Physical health

In the GSS 2018, respondents (n = 2328) were asked...

"In general, how would you rate your physical health?"

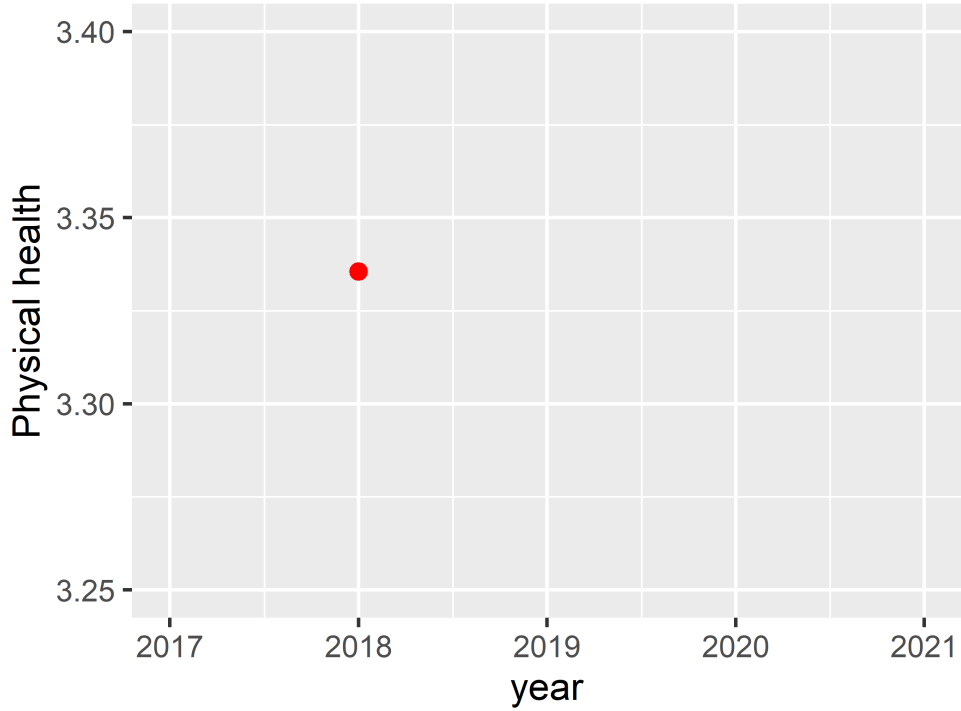
5. Excellent

4. Very good

3. Good

2. Fair

1. Poor



M = 3.34

SD = 1.08

Mental health

In the GSS 2018, respondents (n = 2328) were asked...

"In general, how would you rate your mental health?"

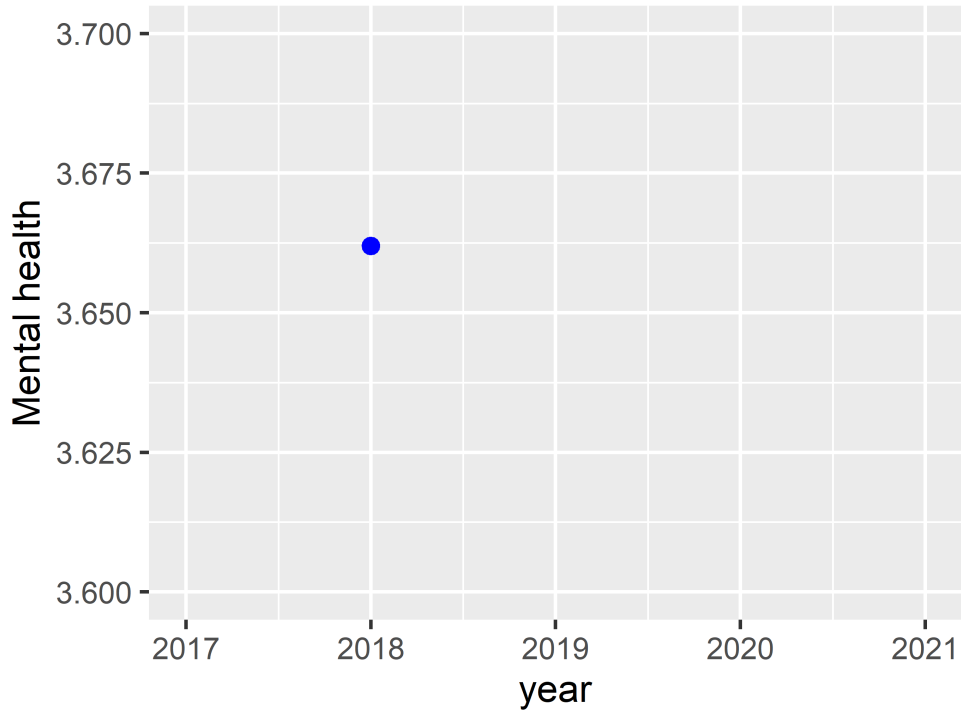
5. Excellent

4. Very good

3. Good

2. Fair

1. Poor



M = 3.66

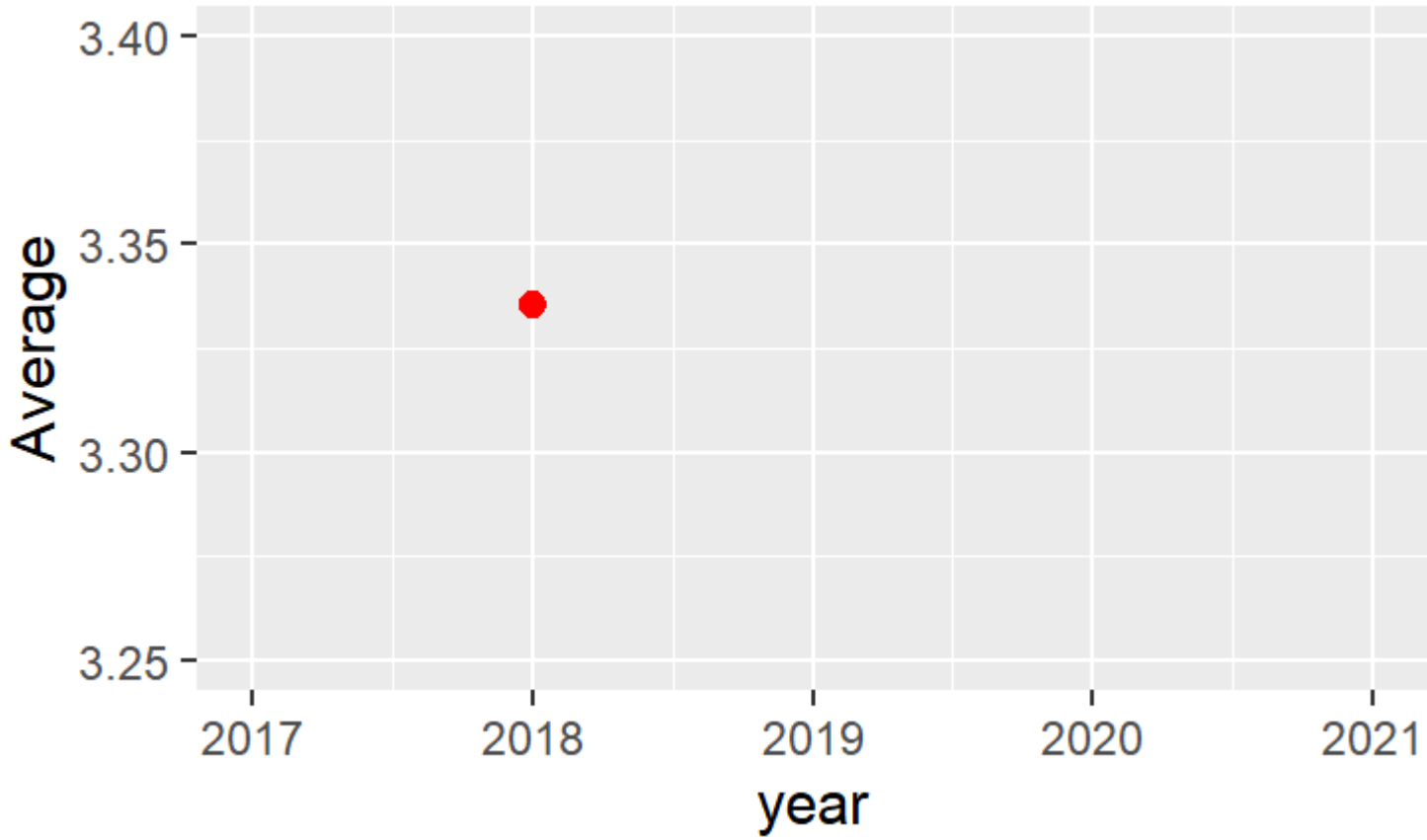
SD = .97

Research Question

Is there a difference in the U.S. national self-rated physical and mental health averages in 2018 vs 2020?

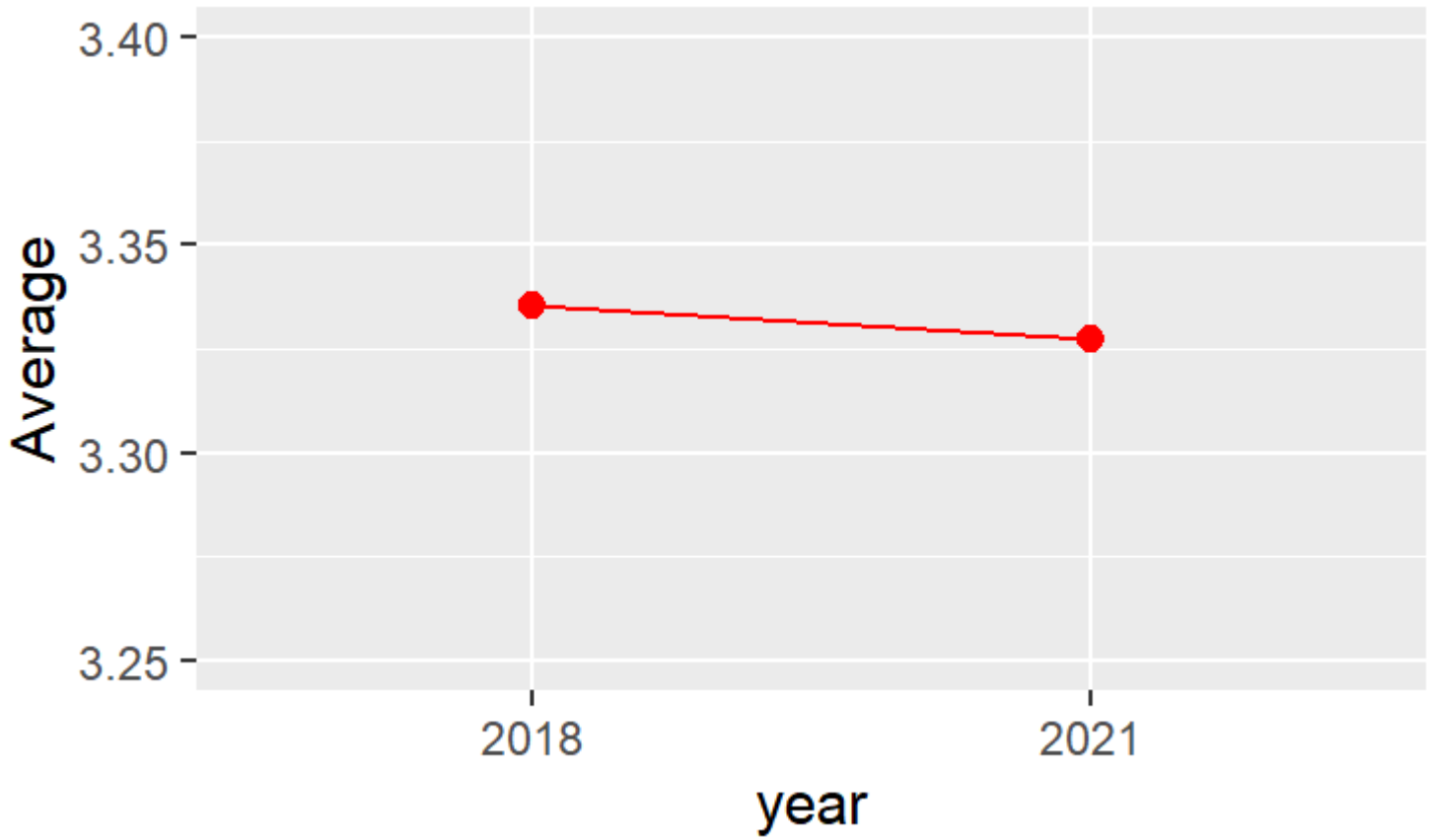
Graphic representation

Physical '18 | Physical '21 | Mental '18 | Mental '21 | Physical & Mental 18-21



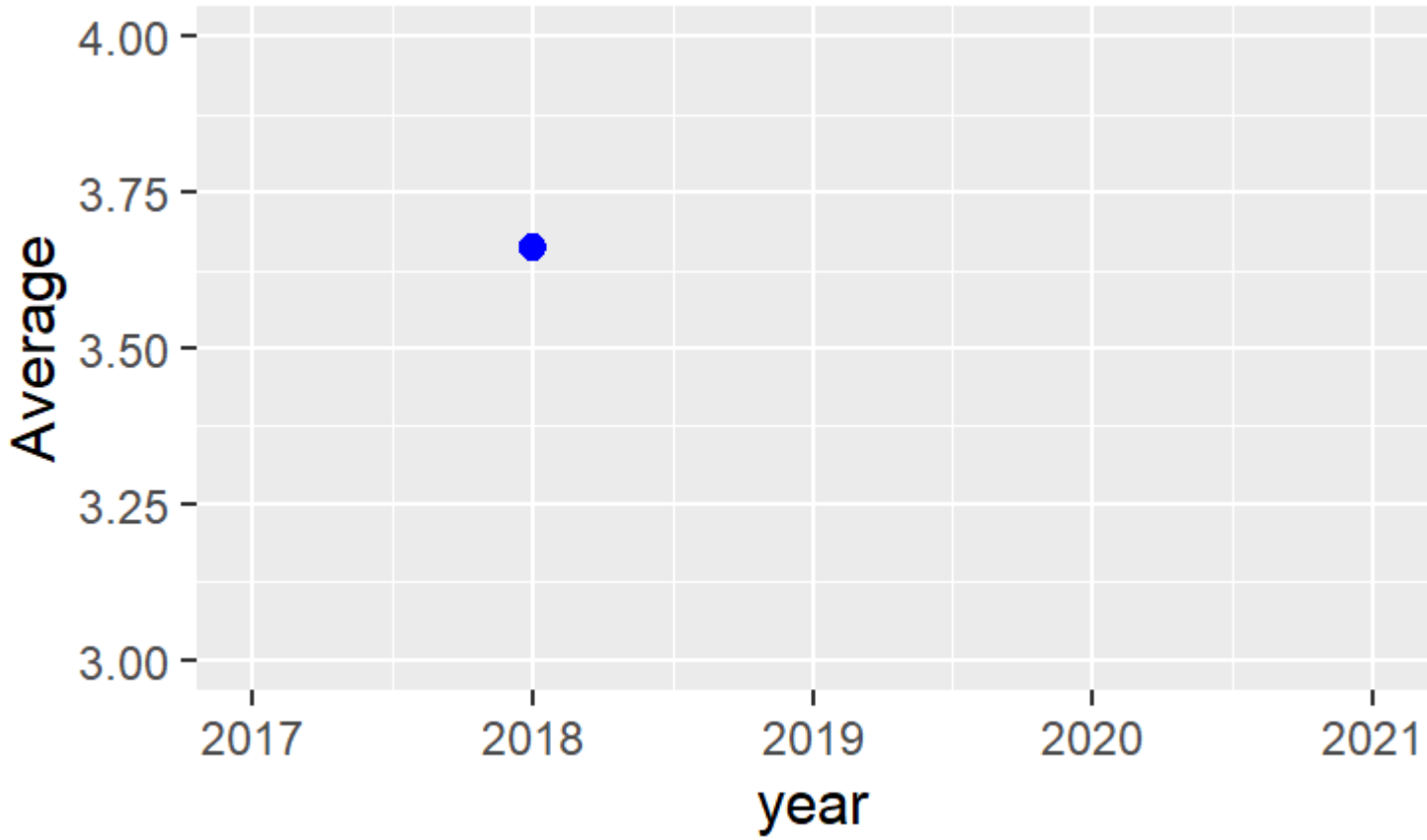
Graphic representation

Physical '18 | **Physical '21** | Mental '18 | Mental '21 | Physical & Mental 18-21



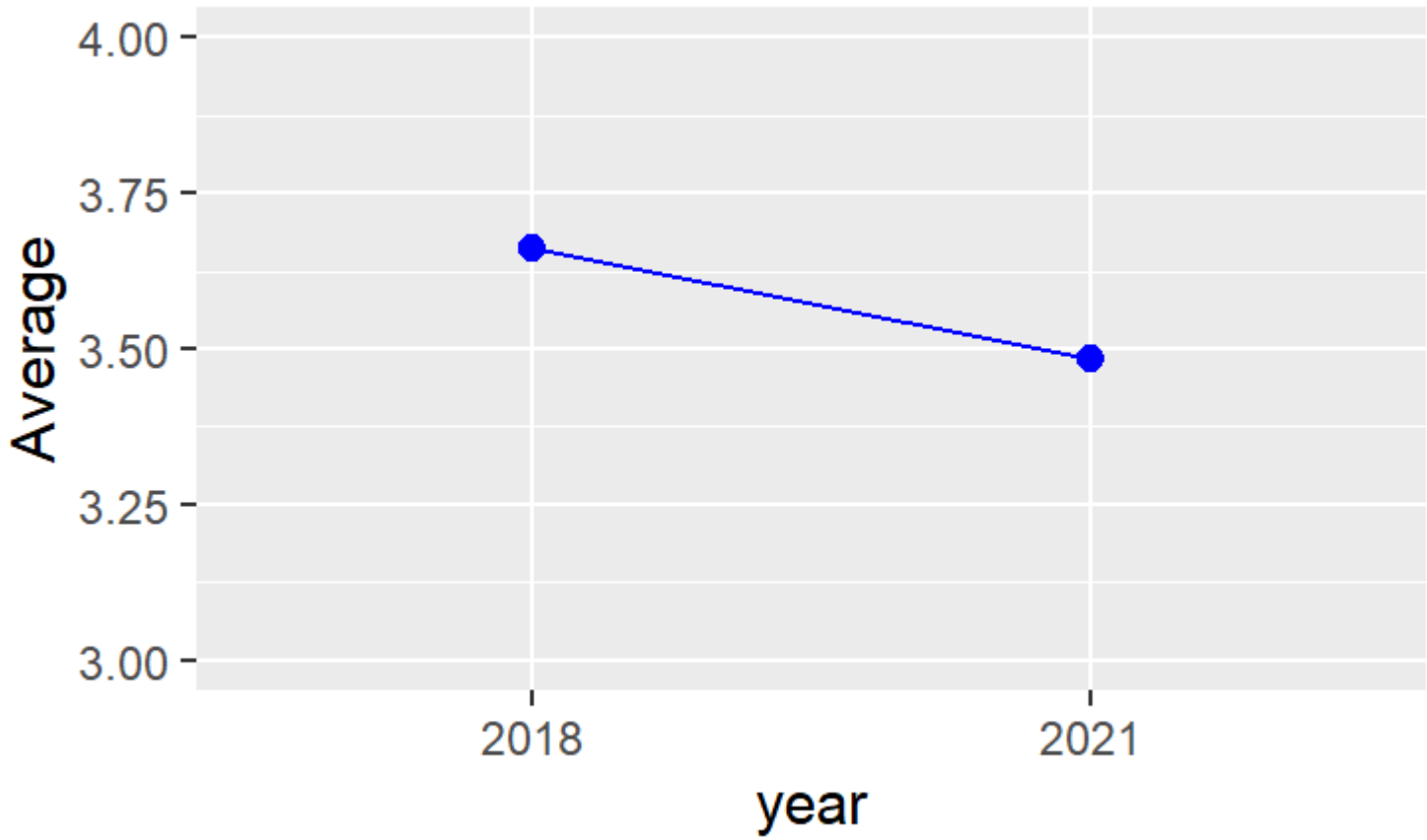
Graphic representation

Physical '18 | Physical '21 | **Mental '18** | Mental '21 | Physical & Mental 18-21



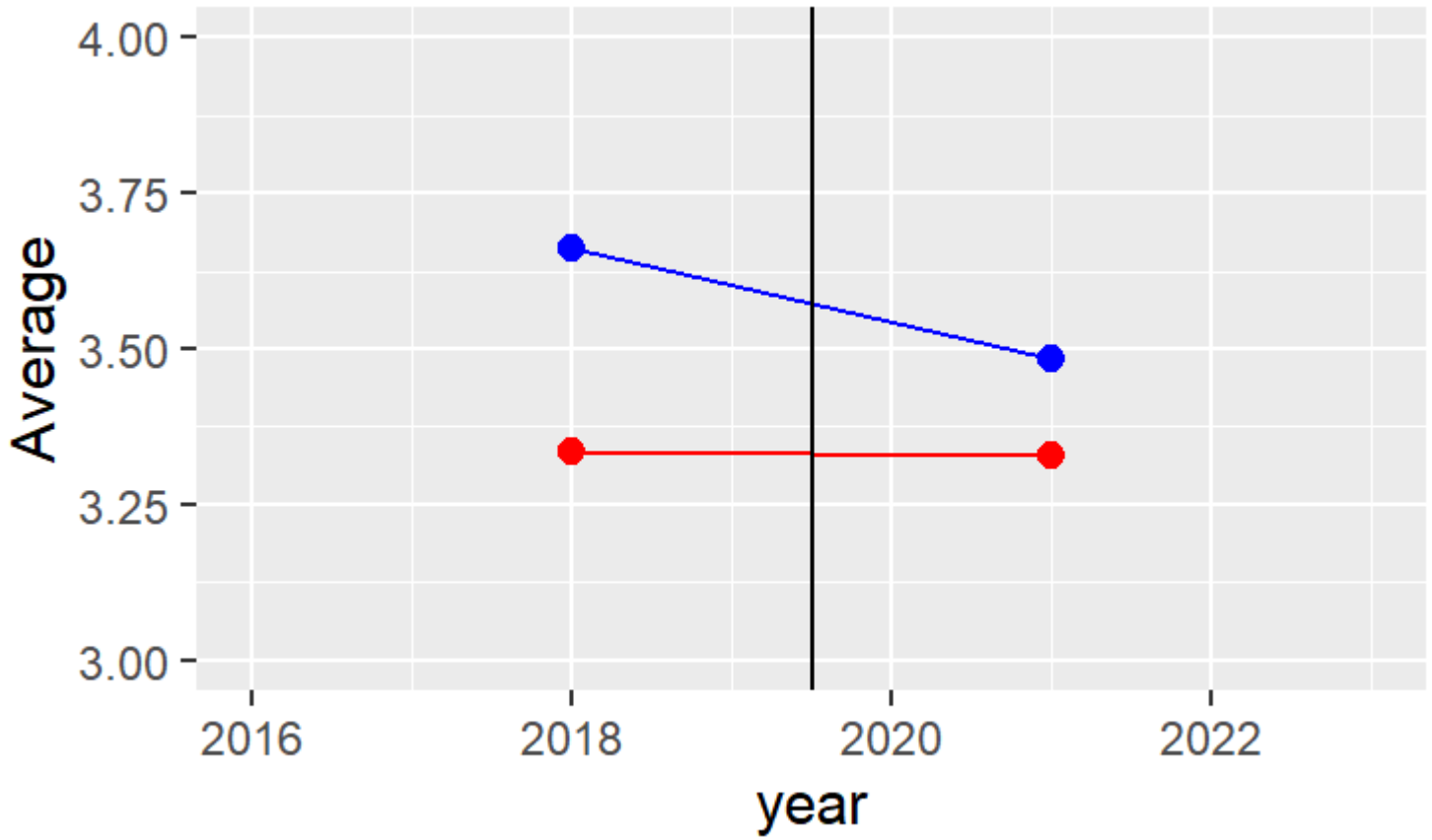
Graphic representation

Physical '18 | Physical '21 | Mental '18 | **Mental '21** | Physical & Mental 18-21



Graphic representation

Physical '18 | Physical '21 | Mental '18 | Mental '21 | **Physical & Mental 18-21**



Is this statistically significant??

Methods

Independent samples ttest

- Ttest (comparing averages)
- Independent observations

Methods

Independent variable

- year (nominal)

Dependent variables

- physical health (interval)
- mental health (interval)

Methods

Merge

- Make 2018 & 2021 GSS into one dataset

Reverse code

- 1 --> 5
- 2 --> 4
- 3 --> 3
- 4 --> 2
- 5 --> 1

Methods

$H_0: \mu_1 - \mu_2 = 0$

Null hypothesis: There is no difference in mean averages in 2018 and 2021.

$H_1: \mu_1 - \mu_2 \neq 0$

Alternate hypothesis: There is a difference in mean averages in 2018 and 2021

Findings

Findings: mental health

estimate	estimate1	estimate2	statistic	p.value	parameter	conf.low	conf.high	method	alternative
0.18	3.66	3.48	6.74	0	5115.27	0.13	0.23	Welch Two Sample t-test	two.sided

Findings: physical health

estimate	estimate1	estimate2	statistic	p.value	parameter	conf.low	conf.high	method	alternative
0.01	3.34	3.33	0.28	0.78	4822.14	-0.05	0.06	Welch Two Sample t-test	two.sided

Conclusions

Conclusions

Limitations | Future implications

Possible violation of ttest assumption?

- interval level outcome
- survey methodology

Generalizability

- Overgeneralization
- Lack of qualitative methods

Conclusions

Limitations | Future implications

Future research should investigate how mental health and physical health changed over time among subpopulations such as gender, race, ethnicity, and SES.

Resources

This presentation was made using:

Rstudio Xaringan

What is it?

RStudio is an Integrated Development Environment for R, a programming language for statistical computing and graphics. It is available in two formats: 1) RStudio Desktop which you can download on your personal computer and 2) Rstudio Server

Where can I learn more?

Dr. Audrey Leroux, assistant professor of research in the College of Education at GSU teaches R programming in the course EPRS 8600 Computer Use in Education. If you are a GSU student and would like to learn how to analyze data in R, consider enrolling in the course!

Dr. Andrew Heiss is an assistant professor in the Andrew Young School of Policy Studies at Georgia State University, as well as a certified R/Rstudio instructor. He teaches R programming in his courses such as PMAP 8101 Data Visualization and PMAP 8521 Evaluation Research. Best of all, Dr. Heiss has made his entire teaching catalog