

Which speedometer apps on mobile phones are the most accurate



## Abstract

In this experiment, the main focus was on comparing how accurate speedometer apps are.

To manage this experiment, I used 4 different speedometer apps and went on the freeway to see which ones showed the correct speed of 100. The most accurate apps are the safest to use.

To comply with international norms<sup>1</sup>, speedometers cannot show a speed lower than the car's actual speed. They tend, in fact, to display a higher number<sup>2</sup>. That's the main reason why there may be a difference between the speed indicated by the car and the one that appears on navigation apps.

The speedometer app from Tim O's Studios was found to be the most accurate during this test. This means that unlike other speedometer apps, it is the most secure and reliable program.

1

<https://english.elpais.com/lifestyle/2023-09-27/whats-right-the-speed-on-go-ogle-maps-or-on-the-car.html>

2

<https://english.elpais.com/lifestyle/2023-09-27/whats-right-the-speed-on-go-ogle-maps-or-on-the-car.html>

## Introduction

The overall question that I chose to build on was 'How accurate are speedometer apps'.

Accuracy is a measure of how close a measurement is to the true value. In this experiment it is assumed the true value is the reading from the car's speedometer.

I chose this topic because these apps can be very inaccurate and since smartphones are used so much in today's society, the apps being inaccurate could cause many problems such as speeding tickets and even car crashes which could cause death.

I am choosing to use 4 speedometer apps: Speedometer Dvoychenko, Speedometer Tim O's Studios, Speed limit Thomas, UniCom Technology. I went on the Eastern freeway and used these speedometer apps 5 times each to see how accurate they really are.

The independent variables are the different apps that I am using. The dependent variable is the speed recorded by each app. The controlled variables are the car I am in, because newer cars would be more accurate than older cars, the speed the car is going, a straight level section of road, because bendy roads might be slower and inefficient.

On modern cars, the true speed is only a few km/h less than the indicated speed. Carmakers calibrate their speedometers to slightly overreport their vehicles' actual speeds.

According to international standards, speedometers must not show a speed lower than the actual speed of the car. In fact, they tend to show a higher number. If this is the case, it would mean that there is a systematic error in the car's speedometer readings since they read consistently higher than the actual speed. This is the main reason why the speed of the car and the speed shown in navigation applications may differ.

## **Aim**

To investigate which speedometer apps are the most accurate to the speed at which a car is going on the freeway. The speeds closest to 100 will be the most precise.

## **Hypothesis**

I predict that the apps with a simpler structure and are easy to use will have more accurate speeds, these apps are Speed limit Thomas and Speedometer Tim O's Studios.

## **Materials**

- Car
- phone
- Speedometer on car
- Speedometer app x4
- Freeway
- driver

## **Method**

1. get inside the car
2. Fasten your seatbelt
3. Open the speedometer app
4. Drive onto the freeway
5. Look at each speedometer app
6. Record the result
7. Repeat experiment 5 times for each app

# Safety Precautions

Making sure to wear seatbelts, not speed and complete the experiment when the road is not busy.

# Risk assessment

RISK ASSESSMENT

Genazzano FCJ College Students

## How accurate are speedometer apps

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Classes for which experiment is required

Teacher: James Plowman Year Group: 8

### Procedure or reference, including variations

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### Equipment to be used

#### mobile phone

##### *Potential hazards*

Frequent use may result in muscular or skeletal problems as a result of carrying phone or posture during use of phone. Injuries may occur while walking with phone, due to reduced ability to sense surroundings. Injuries may occur while taking selfies at unsafe locations. Social problems may arise from the use of social media.

##### *Standard handling procedures*

Do not walk while using phone or take selfies at unsafe locations. Minimise use of phone, especially social media usage. Handle with care, since screen may break if dropped. Water, especially sea water, may cause irreparable damage. Do not place in a microwave oven.

### Others

Car

Seatbelt

Speedometer

Freeway

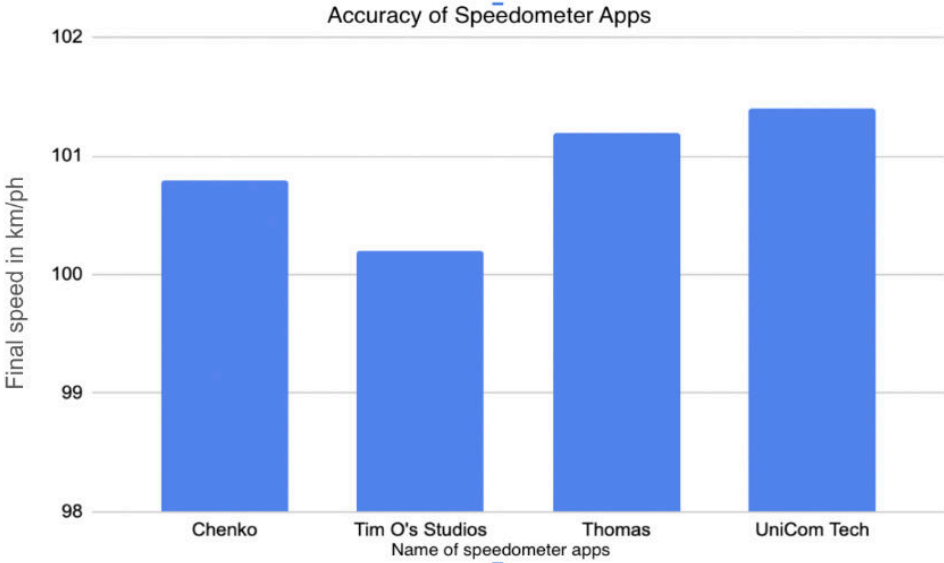
# Results

## Table

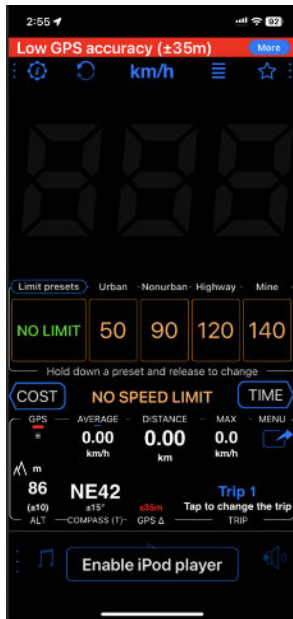
Speeds recorded for speedometer apps (km/h)

	Chenko	Tim O's studios, LLC	Thomas	UniCom Technology
Trial 1	101	100	102	102
Trial 2	100	100	101	101
Trial 3	102	101	101	103
Trial 4	101	100	100	101
Trial 5	100	100	102	100
Average	100.8	100.2	101.2	101.4

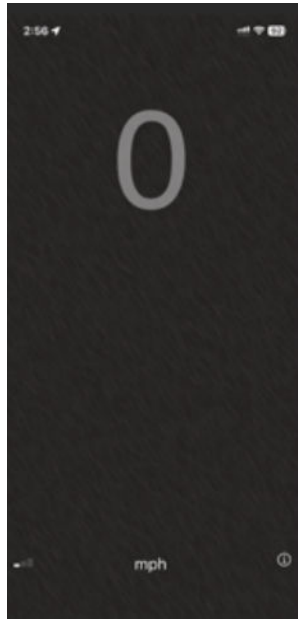
## Bar graph



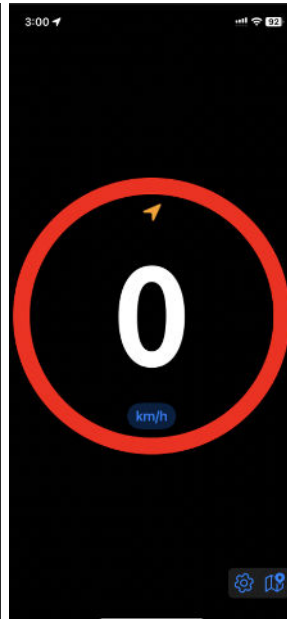
Photos:



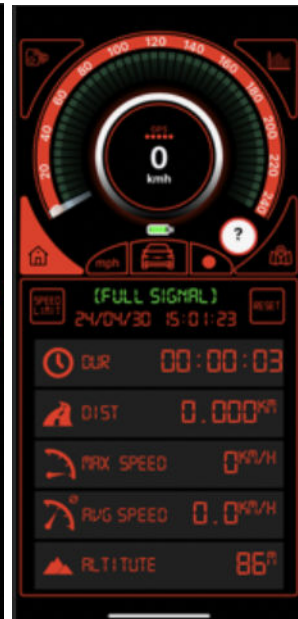
Chenko



Tim O's Studios



Thomas



UniCom Technology

## **Discussion:**

The most accurate speedometer app was Tim O's Studios speedometer app which had the average speed as 100.2km/h, the second most accurate was Chenko speed app which had the average speed as 100.8km/h, the third most accurate was the Thomas speed app which had the average as 101.2km/h and the least accurate app was UniCom Technology app which had the average speed as 101.4km/h.

My hypothesis was supported, I predicted that either Tom O's studio or Thomas speedometer app would be the most accurate because they were the easiest to use and had the simplest structure, the results indicate that Tim O's Studios speedometer app had the highest accuracy.

This experiment was fairly valid, all of the required variables were controlled as much as possible and the data collected was not biased to fit a trend. To improve this experiment I could've used a speedometer app which cost money to see if it was more accurate and I would also change the car I used. The car I used is 12 years old, therefore the accuracy of the car speedometer may not be as good as in a new car. Since all of the results were higher than what the car's speedometer displayed, it is very possible that the car's reading was slightly lower than the speed at which the car was actually traveling at. This could be a problem which I could fix by using a different, newer car. A newer car would have a more accurate speedometer which would make the experiment far more valid.

To improve my data collection, I would take more trials and average them. The more trials I take, the more precise the results should be. If I could redo this experiment I would take 8-10 trials to ensure which speedometer apps are most reliable.

Further investigations might involve seeing if there is a difference between the readings on a straight road and a curved road. It could also be investigated if an individual app is more accurate at slower speeds than at higher speeds.

## **Conclusion:**

From this experiment, It was found that Tim O's Studios speedometer app was the most accurate. This means it will be the safest and most reliable app to use in contrast to other speed apps.

The results show that the speedometer app from Tim O's Studios had the highest accuracy, confirming my hypothesis that it would be either Tom O's Studios or Thomas's speedometer.

## Acknowledgments and References:

I acknowledged my father as he drove me in the car so that my readings could be taken.

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Tim O's Studios speedometer app

UniCom Technology speedometer app

Dvychenko Speed limit app

Thomas Speedometer app

Speedometer app: an app used to measure speed in different units such as meters and kilometers.

