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# Is U.S. News College Ranking a Weapon of Math Destruction?

Zhipeng Kui '22

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## Introduction

In *Weapons of Math Destruction,* Cathy O'Neil developed the concept of Weapon of Math Destruction (WMD). According to O'Neil, WMDs are mathematical models and algorithms that can lead to harmful consequences that reinforce preexisting social inequality. The most harmful WMD typically has a large scale, widespread damage, and a pernicious feedback loop. In *Weapons of Math Destruction*, O'Neil claimed that the college ranking system created by U.S. News & World Report is a WMD as this system possesses all characteristics of a harmful WMD.

This poster presents Cathy O'Neil's arguments and connects them with Columbia's ongoing ranking scandal to show why we should view U.S. News college ranking as a WMD.
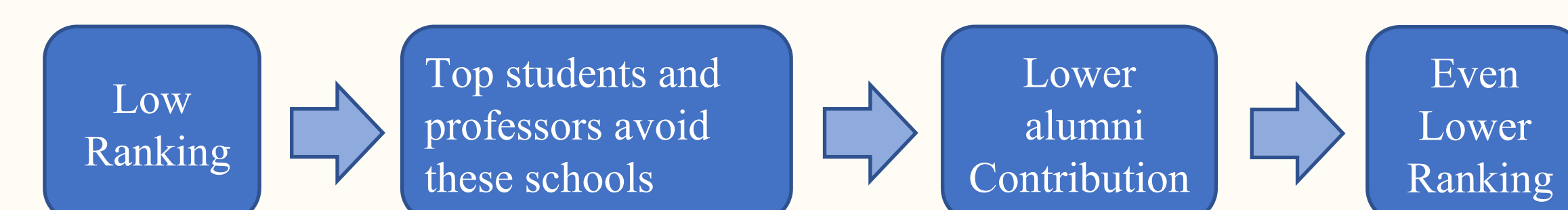
## O'Neil's Arguments

**Problems associated with the ranking algorithm**
- No explicit definition and direct measurement for educational excellence
- Biased ranking proxy selection
- Does not count tuition as a ranking factor

**WMD for colleges**
- Self-reported data are susceptible to manipulation
- The ranking system creates a vicious feedback loop:

Low Ranking → Top students and professors avoid these schools → Lower alumni Contribution → Even Lower Ranking

**WMD for students**
- The national standard forces everyone to shoot for the same goal (ex. Test score)
- Poor and middle-class students don't have as many resources to improve their application as students from wealthy families
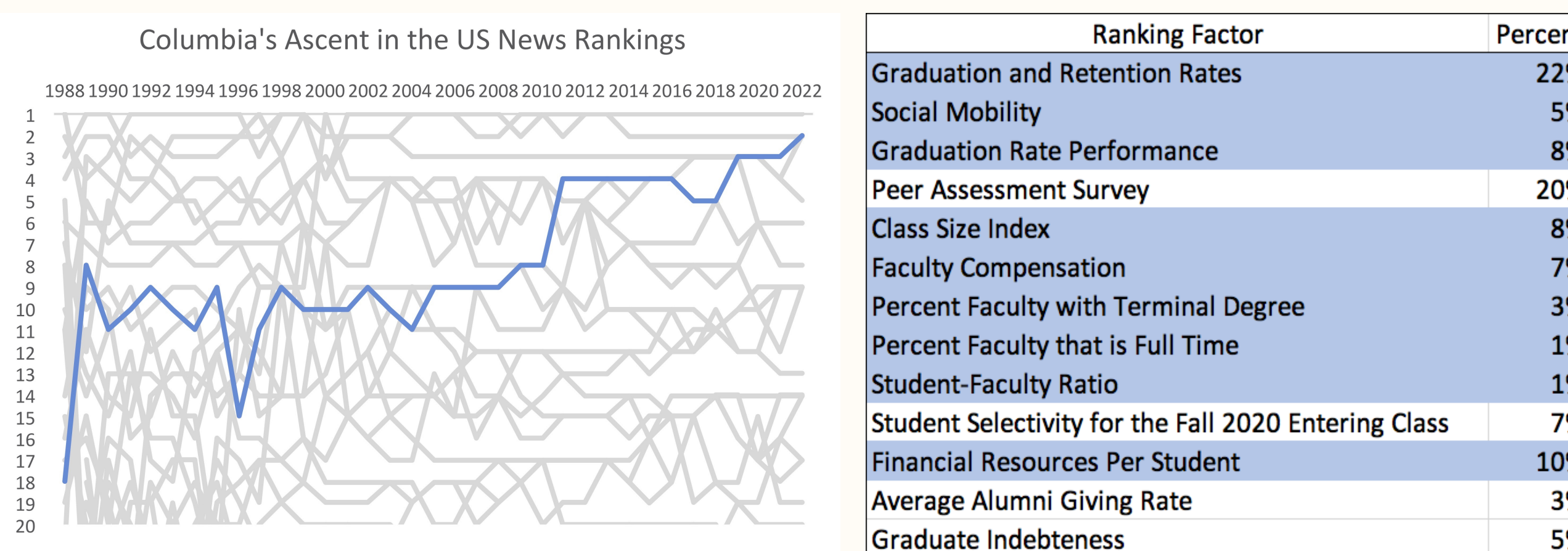
## Example

Columbia's Ascent in the US News Rankings

1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022



Figure 1. Columbia University's ranking ascended to **No.2** in U.S. News & World Report ranking of national universities.

| Ranking Factor | Percent |
|---|---|
| Graduation and Retention Rates | 22% |
| Social Mobility | 5% |
| Graduation Rate Performance | 8% |
| Peer Assessment Survey | 20% |
| Class Size Index | 8% |
| Faculty Compensation | 7% |
| Percent Faculty with Terminal Degree | 3% |
| Percent Faculty that is Full Time | 1% |
| Student-Faculty Ratio | 1% |
| Student Selectivity for the Fall 2020 Entering Class | 7% |
| Financial Resources Per Student | 10% |
| Average Alumni Giving Rate | 3% |
| Graduate Indebtedness | 5% |

Table 1. The composition of U.S. News' ranking of educational excellence.

Columbia math professor Michael Thaddeus published a blog post questioning the validity of Columbia's ranking as well as the position of the U.S. news college ranking:
- The highlighted ranking factors in Table 1 are factors that Professor Thaddeus found numerical evidence for data mismatch.
- **All numerical discrepancies are in Columbia's favor**. For example, Columbia reported a graduation rate of 96% but Professor Thaddeus argued the actual graduation rate is lower than 92%.
- Professor Thaddeus failed to replicate the other metrics due to a lack of accessible information.

## Connection

U.S. News college ranking is **susceptible to manipulation**
- All numerical discrepancies found are in Columbia's favor.
- Since self-reported data from colleges make up 80% of the ranking factors, college officials can manipulate the ranking easily by providing inaccurate data.

U.S. News college ranking **incentivizes colleges to provide fake information**
- Inflating rankings with fake data allows colleges to attract brighter students, professors, and more endowments.
- Their ranking will keep rising on the list.
- This self-reinforcing loop incentivizes more colleges to provide inflated data so that applicants cannot get accurate information.

## Discussion

Many people view choosing college as an important life decision since colleges can shape their career paths and introduce them to lifelong friends, including a spouse. When making this decision, many people referred to the U.S. News college ranking because they consider the U.S. News college ranking a reliable and convenient way of comparing schools. However, as shown by Columbia's example, these rankings are subject to manipulation. Thus, people should not view the U.S. News college ranking as an authority.

Furthermore, U.S. News valued incoming students' academic performance such as test scores as an important ranking factor. To achieve a higher ranking, colleges tend to accept only students with high test scores. Having a national standard for all students is a bigger problem because this standard forces everyone to join a rat race. In this endless race, students from wealthy families will have more advantages because they can pay to attend application camps to improve their applications. Consequently, students from poor or middle-class families will have fewer opportunities to attend prestigious educational institutions. As a result, this ranking system deepens the social divide.

Therefore, the current U.S. News college ranking is a WMD. The following are a few **potential solutions**:
- Develop individualized metrics for students that allow each student to explore their own interests.
- Provide transparent information to the public so that each student can build their individualized ranking based on personal preferences.

## References

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