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A Well-Being Ranking of US Colleges: Enabling Students to Choose a Life of Flourishing and Encouraging Schools to Measure It

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Abstract

Well-being is related to and predictive of a whole host of positive outcomes. Despite well-being's demonstrable downstream effects in domains such as education, health, and the workforce, it is not overtly taken into account in popular rankings of U.S. colleges. Research has demonstrated that these rankings not only impact the choices made by applicants but also affect the strategic and financial decisions made by the colleges themselves. Given well-being's utility, the current state of college rankings, and the demonstrated impact of these publications, an opportunity exists to supplement the field with a well-being ranking of U.S. colleges. I propose a ranking methodology that leverages big data analyses, technology-based behavioral measures, and self-report questionnaires. It is my hope that such a college ranking would enable students to choose a life of flourishing and encourage schools to better support the well-being of their communities. What we measure matters: we pay attention to what we measure, we can evaluate the impact of what we measure, and we can improve what we measure. Well-being is worth paying attention to, evaluating, and improving.

Keywords

college ranking, positive education, flourishing, positive psychology, psychometrics, well-being, wellbeing, rankings, big data

Disciplines

Psychology

Comments

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A Well-Being Ranking of U.S. Colleges: Enabling Students to Choose a Life of Flourishing and Encouraging Schools to Measure It

Krista Marie Logelin

University of Pennsylvania

A Capstone Project Submitted

In Partial Fulfillment of the Requirements for the Degree of

Master of Applied Positive Psychology

Advisor: Alejandro Adler, Ph.D.

August 1, 2018

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Section One

Scope of Current Discussion

You could say I'm a pretty great cold-caller. My work study job in undergrad was to dial our alumnae and ask for their annual monetary gift to the college. When convincing them to donate, we as callers were advised to suggest that even a small donation would help us boost our participation rating, which would help us move up a rank in the *U.S. News and World Report* (*USNWR*) ranking of the best colleges. This ranking, we were encouraged to remind whoever was on the other end of the phone line, not only affected the quality of future application pools but also impacted the integrity of our degree as graduates. Indeed, the *USNWR* considers giving rates as well as a few other metrics, such as admissions selectivity and graduation rates, when calculating college rankings (Morse, Brooks, & Mason, 2017). While I am sure these indicators tell us something about how well-functioning an educational institution is, they do not directly consider well-being. This experience sparked in me a desire to better understand the current state and effects of college rankings, as well as an aspiration to create a new ranking that overtly considers well-being.

The present discussion will consider how well-being can be leveraged to rank colleges in the United States. First, I will introduce positive psychology and explore the utility for well-being by making a case for its utility in downstream positive outcomes. Next, the current state of popular college rankings in the U.S. will be explored through a dissection their different objectives, metrics, and data sources. I will then propose ways in which well-being could be measured in order to rank colleges based on the well-being of their students and broader communities. I will close by summarizing existing evidence-based interventions for imbuing positive psychology into education systems.

Considering positive psychology's aim to increase human flourishing along with the goal of colleges to prepare students for success in life, I believe a natural union exists. Until now, this union has not been fully operationalized, and it is my hope that a well-being ranking would both enable students to choose a life of flourishing and encourage college institutions to better support the well-being of their communities.

Introduction to Positive Psychology

A Brief History. The field of psychology has historically focused on ill-being, and for good reason. Psychology's most infamous pioneer, Sigmund Feud, came onto the scene at a time that psychological disorders were especially relevant. During that period, the impact of World War II on soldiers and their communities served as a catalyst for the study and treatment of psychological disorders, such as anxiety, depression, post-traumatic stress, bipolar, and schizophrenia (Seligman, 2011). Importantly, people with these and other illnesses now have a growing body of scientific research behind their treatment plans. Further, we now know much more than ever before about how to prevent these illnesses in the first place (Peterson, 2006).

But what about everyone else – those who are fortunate enough to not struggle with diagnosable psychological disorders? Though psychology quickly expanded beyond the domains of abnormalities and clinical treatment into other areas of human psychological functioning, such as personality, behavioral, developmental, and industrial-organizational psychologies, little focus had yet to be given those who were "normally functioning" (as in, without psychological disorders), and how they could go from good to great.

In the mid-1990's, Martin E. P. Seligman took on the Presidency of the American Psychological Association. Seligman had previously made a name for himself in the study of learned helplessness and as a professor at the prominent University of Pennsylvania. With this

platform, Seligman began to garner interest within the psychology community in studying not just on how to treat mental illness but instead how to increase the flourishing of all people through positive emotion, engagement, meaning, relationships, and accomplishment. Where existing theories around happiness had the goal of increasing life satisfaction, Seligman began challenging the field to think more broadly about a holistic and eudiamonic approach to a life of flourishing through well-being. He effectively took a field founded on a focus on what could go wrong with people to adding a new focus of what could go right (Seligman, 2011).

The study of clinical psychology and the pursuit to heal those with disorders is no doubt a necessary one. Positive psychology aims not to replace clinical psychology or detract from its study, but, instead, to bring an additional focus to the science of psychology: living the good life. From this new field has already come a remarkable array of empirical research, theories, and writings. Different from inspirational speakers and pop gurus, positive psychology researchers anchor their work in the scientific method. Further, it regards as legitimate both what is good and bad about life (Peterson, 2006). It is the field of positive psychology to which the present discussion is grounded.

Frameworks. Seligman (2011) compares well-being to constructs like "weather" and "freedom" in that they are not defined by one single measure. In the same way weather is comprised of multiple elements, including temperature, bromic pressure, and wind speed, so too is well-being comprised of more than one component. To help understand the broad construct of well-being, researchers have used frameworks to help operationalize their explorations. While each of the popular frameworks has something different to offer, no single one reigns as the gold-standard. This variety and diversity in perspective allows those who study and apply positive psychology to work within the framework that best fits their unique domains.

One of the first to offer an empirically-based framework was Ryff (1989). Recognizing a need for the psychological literature on well-being to be guided by a theoretical, multi-dimensional foundation, she offered six distinct constructs of psychological functioning: self-acceptance, positive relationships with others, autonomy, environmental mastery, purpose in life and personal growth. With this data-driven framing, Ryff hoped the study of well-being would be able to grow empirically.

From there, multiple frameworks have arisen. For example, the Gallup Organization, best-known for its polls and, perhaps, less-known for its work in well-being, leveraged its remarkable data-collection and analysis powers to produce the Gallup-Healthways Well-Being Index (GHWBI). The GHWBI offers five separate domains of well-being in its framework: physical, community, financial, purpose, and social. Data collected from the GHWBI has even been able to identify a point at which annual income no longer has much impact on well-being: $75,000.00 (Kahneman & Deaton, 2010). Diener, Emmons, Larsen, and Griffen (1984) offer an example of a single-domain framework of well-being with their concept of satisfaction with life. Here, they define well-being as a global satisfaction with life, which they show to correlate with subjective well-being and theoretically related personality traits, such as sociability and self-esteem.

Seligman offers the PERMA framework, which is comprised of positive emotion, engagement, positive relationships, meaning, and achievement. He includes each of these elements (and exclusively these elements) because of their demonstrated abilities to contribute to well-being, be defined and measured independently, and because people choose to pursue them for their own sake (Seligman, 2011). In this menu of models and methodologies, the present discussion will be mostly framed by the PERMA framework. Empirically, PERMA offers an

efficient, parsimonious perspective on well-being in which a minimal number of domains capture a wide variance of the construct. We will be able to achieve a robust discussion of a multi-faceted construct in an orderly way. Further, the education domain is already well-rooted in PERMA-centric evidence and methodologies upon which this discussion will build.

The first domain in Seligman's framework is positive emotion, the effects of which actually begin in the past. Studies have shown that the harmful consequences of negative emotions can in fact be undone, not just replaced, by experiences of positive emotions (Fredrickson & Levenson, 1998). Positive emotions also impact our present, in that they have been shown to literally expand our range of vision (Waldinger & Isaacowitz, 2006). Fredrickson's and Branigan's (2005) research in this area demonstrates that not only do we see more of what is around us when we have positive emotions, we also experience a broadening effect in which we are more opened up and better able to see the conceptual "big picture". Finally, positive emotions prepare us for the future. They have been shown to build personal resources, such as environmental mastery and positive relations with others (Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008).

The second domain of PERMA is engagement. Seligman (2011) describes engagement as experiences in which time stops and one becomes completely absorbed by the task. Indeed, engagement has been shown to be related to increased levels of subjective and objective well-being (Schueller & Seligman, 2006). Another pioneer of the positive psychology field, Mihaly Csikszentmihalyi, offers a theory of optimal human experience that deepens our understanding of engagement and its positive outcomes. His concept of flow begins with an exploration of human consciousness. Csikszentmihalyi (1990) defines psychic entropy as an inner disorder caused by disruptions in consciousness. This disorganization, he says, impairs a person's

effectiveness in pursuing those goals. On the flip side, Csikszentmihalyi posits flow is achieved when a person arrives at an order of consciousness. He defines flow as a state of optimal experience in which people experience effortless attention, and an absence of both time awareness and emotion, terms nearly identical to Seligman's description of engagement. These states are cultivated, Csikszentmihalyi claims, when the challenge of the task meets the skill of the pursuer, a state he dubs optimal experience.

The third domain of PERMA is positive relationships. Relationships can be considered at multiple levels, such as dyads, groups, or whole communities. The social support that results from these relationships has been linked to numerous positive outcomes, such as good health and reduced stress (Cassel, 1976). At the community level, studies have even demonstrated that the well-being of those geographically near you impacts your own flourishing (Fowler & Christakis, 2008). Studies such as these indicate the ways in which the quality of our relationships impacts our own well-being.

The fourth domain of PERMA is meaning. According to Smith (2017), meaning is comprised of belonging, purpose, storytelling, and transcendence. Martela's and Steger's (2016) theory defines meaning in three domains: coherence, purpose, and significance. Coherence, the authors posit, is meaning in what we have here and now. It considers making sense of life experiences. Purpose, they theorize, is the forward-looking component of meaning. Third, the significance component of meaning asks why anything matters (Martela & Steger, 2016).

The final component of PERMA is achievement. The quality and frequency of our accomplishments influences our ability to flourish (Seligman, 2011). Related to achievement, Duckworth (2016) defines grit as the combination of passion and perseverance leading to successful goal pursuit. In her studies of Scripps National Spelling Bee participants, students

with higher scores on a grit scale were more successful than their non-gritty competitors (Duckworth, Peterson, Matthews, & Kelly, 2007). Grit does not only affect the nation's top spellers. Similar differences in success related to grit were found in multiple other domains, such as success at West Point (Duckworth et al., 2007).

Seligman's PERMA framework lends a useful infrastructure for conceptualizing how well-being can be understood and enhanced in an effort to better peoples' lives in the college context:

- *Positive Emotions:* As students are sure to experience negative emotion during their college years and beyond, increased levels of positive emotion will help repair the damage (Fredrickson & Levenson, 1998). The heightened awareness of positive emotions could have numerous positive effects on students, including enhanced creativity and expanded views of the self (Fredrickson, 2009). With a purpose of a college education being to prepare students for the future, the build effect of positive emotions is a natural goal.

- *Engagement:* Where colleges are preparing students for their future careers, these institutions have the opportunity to guide students to match their skill with challenge and foster beneficial experiences of flow throughout life.

- *Relationships:* Relationships can be considered at multiple levels, such as dyads (roommate relationships), groups (campus organizations), and whole communities (the student body). Considering the demonstrated impact of positive communities, even just living near other students with high levels of well-being could have a positive effect on them as individuals. Regardless of which level you consider, relationships are perhaps one of the most attended-to components of the traditional American college experience

(Fowler & Christakis, 2008). Whether it be the anticipation of being assigned your first

roommate, joining a student organization, or participating in the alumni association, the

relationships formed in college are arguably as impactful as the education itself.

- *Meaning:* In the college setting, meaning can manifest both during the educational

   experience itself and in how the institution prepares the student to pursue a life of

   meaning. Consider, for example, that many colleges tout a motto or a purpose statement.

   The extent to which the motto considers meaning and encourages it in their students, the

   more meaning the community could imbue. For example, the motto of my own

   undergraduate alma mater is "Non Ministrari sed Ministrare" (Not to be ministered unto,

   but to minister), a proclamation rich in meaning. A college that promotes belonging,

   purpose, storytelling and transcendence, or guides students towards coherence, purpose

   and significance in their careers, has the ability to directly foster meaning.

- *Achievement*: Perhaps the most overt connection between well-being and colleges in

   today's current education climate, achievement enters into the college experience in

   innumerable ways – from the achievement of passing a class, to obtaining an interview,

   to securing a job, or to admission to post-graduate education.

Section Two

Introduction

Foundational to the consideration of a ranking of colleges by well-being is an

understanding of the utility of well-being. What should we care? At a basic level, we know

well-being is related to the ability to live a flourishing life. For example, in the U.S., Suh,

Diener, Oishi, and Triandis (1998) found a significant positive correlation between positive

affect and life satisfaction. Further, a significant negative correlation was found between

negative affect and life satisfaction. These findings point to a functional value of emotions, one of the core domains of well-being.

Further, well-being is of significant value to college students. In an international study of over 7,000 college students from 42 countries, information was collected on the importance of various life outcomes to this population. Participants were asked how often they thought about life satisfaction and happiness, and how important life satisfaction, happiness and money were to them. Interestingly, life satisfaction and happiness were rated as more important than money for U.S. college students, indicating the significance of well-being to self-defined success criteria (Diener, 2000).

Diener and Biswas-Diener (2011) write that happiness is a process, not a place. They describe happiness not as an emotional finish line but as a way of going through life. Importantly, how satisfied with life we are is, at least partially, plastic, as opposed to being fixed from the start. Fujita and Diener (2005), using longitudinal data from a nationally representative German panel study, found that life satisfaction can change overtime. Their analyses showed life satisfaction to be more malleable than other longitudinal indicators such as height, weight, body mass index, blood pressure, and personality traits. These findings bode well for people aiming to flourish further: despite a person's current state, it is possible to improve well-being. As students aim to improve different components and outcomes of their lives, well-being can be one of them.

In this next section, I will explore how well-being helps people function more optimally. As has been shown time and time again, educational, career, and health outcomes are all positively impacted by a person's psychological well-being. Colleges set out to prepare students to succeed in life after graduation, and these studies point to the importance of well-being in

fostering success. Further, where students invest in a college degree with the goal of enhancing their life outcomes, well-being is demonstrably an important functional component of this goal.

Education.

"Education is the most powerful weapon which you can use to change the world." –

Nelson Mandela

Of important consideration for the student population is well-being's relation to educational outcomes. College academic performance plays a role in determining a student's access to post-graduation opportunities, such as internships, jobs, graduate degree programs, salaries, and funding. Further, well-being can help colleges meet their goals of preparing students to successfully complete their degrees.

In a foundational study by Isen, Daubman, and Nowicki (1987), positive affect was shown to facilitate creative problem-solving capabilities. Since then, Barbara Fredrickson, has assembled an impressive body of research demonstrating the role of positive emotions in the ability to broaden the scope of a person's attention. In a study of 104 U.S. college students, participants' emotional state was induced using film clips shown to elicit either amusement, contentment, neutrality, anger, or anxiety. Scope of attention was subsequently measured using a global-local visual processing task. The results showed people experiencing positive emotions (as compared to negative or neutral emotions) had a significantly broadened scope of attention, allowing them to literally see more possibilities. Further, a second experiment within this study demonstrated that the people experiencing positive emotions also had more thought-action urges, as measured by an open-ended Twenty Statements Test, indicating the ability of positive emotion to enable people to build personal resources. Interestingly, these effects were most pronounced for the amusement and contentment positive emotions (Fredrickson & Branigan, 2005). Rowe,

Hirsch, and Anderson (2006) followed-up these findings with a study pointing to loosened

inhibitory control as a mediator for positive emotion's role in broadening the scope of attention.

Taken together, these studies help us understand well-being's, specifically, positive emotion's,

role in students' abilities to see more possibilities, problem solve, and build personal resources.

Considering the growing focus on innovation and creativity in the workplace, the connection

between well-being and broadened attention is a relevant one.

Additionally, measures related to well-being have been shown to predict academic

retention. In a study by Frisch, Clark, and Rouse (2005), a measure of life satisfaction

(specifically, the Quality of Life Inventory) was shown to predict academic retention one to three

years later in a study of more than 3,000 U.S. college students. Over the four-year experimental

period, all participants were administered the self-report inventory of life satisfaction as part of a

therapy process, and academic retention was measured by enrollment status at the end of the

study. Importantly, the predictive effect was found to persist when considered in conjunction

with cumulative grade point average (GPA), a measure more traditionally used to predict

retention in this setting. The authors suggest well-being constructs continue to be studied as

methods for improving academic and life outcomes for general populations (Frisch, Clark, &

Rouse, 2005).

This study is just one of many exploring the relationship between well-being and

academic outcomes. In a meta-analysis, Durlak, Dymnicki, Taylor, Weissberg, and Schellinger

(2011) considered 213 school-based social and emotional learning programs and the outcomes of

those students as compared to control populations in traditional learning environments. Social

and emotional learning, which is defined as the process of learning competencies related to well-

being, such as the ability to establish positive relationships, recognize and manage emotions, and

achieve positive goals, was shown to predict increased positive outcomes in the areas of academic performance, behavior, and social skills. In a related example, Capara, Barbaranelli, Pastorelli, Bandura, and Zimardo (2000), found that prosocial behavior positively impacts later academic and social performance. Where students can garner the skills to enhance their relationships and academic achievements, their well-being and educational outcomes will be positively impacted.

Seligman and colleagues, in collaboration with the Positive Psychology Center at the University of Pennsylvania, have recently begun a remarkable movement in positive education. This movement found its beginning at the Geelong Grammar School near Melbourne, Australia where educators have been able to teach students to improve their skills in resilience, positive emotion, engagement, and meaning (Seligman, Ernst, Gillham, Reivich, & Linkins, 2009). This pursuit of positive education has expanded around the world (including in Bhutan, Mexico, United Arab Emirates, China, India, and the U.S.), and subsequent empirical evidence has demonstrated enhanced academic performance in schools that emphasized in positive education (Adler & Seligman, 2018).

Studies such as these help build the case for well-being's utility in positive outcomes related to education. Whether it be broadened scope of attention, creativity, personal resources, academic retention, positive relationships, or academic achievement, this empirical evidence demonstrates the importance of well-being in education, and it calls for attention to be given to well-being measures in this domain.

Career Outcomes.

"Whatever you are, be a good one." – Abraham Lincoln

College degrees are traditionally pursued with career outcomes top of mind. Majors are selected as a way of specializing in a specific subject area in order to pursue a career in that field after graduation. The schools themselves invest in career services departments with the goal of supporting students in their job searches. In this section, I will explore the utility of well-being in career outcomes.

In a foundational study, Seligman and Schulman (1986) demonstrated that a positive outlook predicted objectively better job performance and employment retention rates. Coming out of Seligman's research on learned helplessness, optimistic and pessimistic explanatory styles are used to describe the ways in which individuals construe the causes of the good and bad events that happen to them. For example, someone with an optimistic explanatory style would attribute a good event to internal, stable and global causes, while an individual with a pessimistic explanatory style would explain that good event in external, unstable and specific ways (Peterson & Steen, 2009). In this field study of explanatory style, approximately 100 life insurance sales agents took the Attributional Style Questionnaire (ASQ) upon being hired by a prominent firm. Their productivity was measured by their quarterly commissions, which directly correlates to the amount of insurance sold, for the first two years of their job. Results showed that agents with a more optimistic explanatory style both sold more insurance and stayed in their jobs longer than the agents with more pessimistic explanatory styles. These findings suggest that optimistic people are more resilient and persistent in the face of hardship and challenge (Seligman & Schulman, 1986).

The way an optimistic explanatory style predicted positive outcomes in life insurance sales, a domain fraught with failure, could be generalized to the college and academic domain, which is also frequented by failure and challenges. If explanatory style is predictive of outcomes

in adverse situations, it is possible that this construct exists in college students. Further, employers clearly also have something to gain by hiring more optimistic employees. With studies like this showing well-being's effect on bottom line business metrics, recruiters should be interested in the talent pools coming out of more positive institutions.

Before even being able to succeed in a job, new graduates must first find success in the job search process. Where Seligman's and Schulman's work demonstrated a link between optimism and objective job outcomes in new-hires, Burger and Caldwell (2000) establish a link between well-being and the ability to receive a job offer. In their study, 99 college students approaching graduation were given a self-report assessment measuring their own positive and negative affect. Three months later, the same students were asked to report on their strategies and rate of success with their job searches. The results showed that high positive affect was positively correlated with having obtained at least a follow-up job interview after three months (Burger & Caldwell, 2000). With one of the customary next-steps after college graduation being to enter the workforce, these data relating positive psychology to the ability to progress in the interview process further demonstrates the utility of well-being.

The link between well-being and positive career outcomes continues. Roberts, Caspi, and Moffitt (2003) conducted a longitudinal study investigating the links between personality and work outcomes in young adulthood. In their study, 980 participants of the Dunedin Study in New Zealand completed a personality measure at age 18 and then again at age 26. Measures of work experience included occupational prestige, occupational complexity, education level, earnings, power, work satisfaction, work involvement financial security, and job characteristics. The results showed that 18-year-olds with higher negative emotions did not fare as well in their careers eight years later as compared to their peers with lower rates of negative emotions.

Further, rates of high positive emotion showed the opposite trend. Specifically, work satisfaction at age 26 was positively correlated with positive emotionality and negatively correlated with negative emotionality at age 18. These findings demonstrate the predictive nature of positive and negative emotions in career outcomes for traditional college-age populations (Roberts, Caspi, & Moffitt, 2003).

Additional longitudinal studies have demonstrated this predictive nature of well-being for positive career outcomes. Diener, Nickerson, Lucas, and Sandvik (2002) measured dispositional affect in students upon college entry, and then looked at their income level and experiences with unemployment 19 years later. The most cheerful college students had a higher current income in their 30's than their less-cheerful peers and were more satisfied with their jobs. Further, these happy individuals were less likely to have been unemployed. The authors offer multiple potential explanations for these positive outcomes, such as cheerfulness acting as a motivating force, attribution style (as corroborated in the life insurance sales agent study discussed above), and cheerful individuals receiving more favorable performance reports.

Taken together, this set of studies helps us understand the ways in which various components of well-being can positively impact career outcomes. Whether it be success in the interview process, job performance, career satisfaction, or income, well-being is a convincing moderator of the outcomes. Students, schools, and employers alike can benefit from enhanced well-being.

Health.

"A cheerful heart is good medicine." – Proverbs 17:22

One of the most studied domains in the utility of well-being is its impact on health. A scholarly journal search of the two terms together yields millions of results. However,

historically, the effects of ill-being, such as depression and anxiety, have been the focus of study when it comes to psychology and health. This next section will explore the growing body of evidence linking psychological well-being to positive health outcomes.

Empirical evidence points to the importance of well-being for all individuals, regardless of good or bad health. A meta-analysis conducted by Chida and Steptoe (2008) concludes that positive psychological well-being is related to better health outcomes in both healthy and diseased populations. For example, as mentioned in the prior section, a study by Fredrickson, Mancuso, Branigan, and Tugade (2000) showed positive emotions actually undid the effects of past negative emotions. In this study of 95 college students, each individual was asked to first write a short speech (an anxiety-inducing activity) and were then made to watch a video clip that elicited either positive, negative, or neutral emotion. Emotions such as amusement, anger, anxiety, contentment, and sadness, were measured using a self-report scale, and cardiovascular condition was measured throughout using metrics of heartrate, finger pulse amplitude, pulse transmission times to the finger, pulse transmission time to the ear, diastolic blood pressure, and systolic blood pressure. The analyses demonstrated that those participants who viewed the positive video clips experienced shortened episodes of cardiovascular reactivity as compared to participants who viewed the neutral and negative video clips. These results indicate that positive emotion was responsible for mitigating lingering negative emotions (Fredrickson, Mancuso, Branigan, & Tugade, 2000).

A review by Pressman and Cohen (2005) helps us better understand the role of positive emotions in health outcomes. In this study, which considered the effects of trait versus state positive affect on health, positive emotions were shown to alter immune activity via endocrine, behavioral, and other biological activities. Where state positive affect considers a current or

recent mood and trait positive affect considers general or enduring mood, the authors find in their review of the literature that trait positive affect is associated with lower morbidity. Further, they find that both trait and state positive affect are associated with decreased symptoms and experiences of pain. The authors hypothesize that trait positive affect is more likely to influence disease outcomes in cases where the underlying process take time to develop, and state positive affect will influence more the progression of a disease (Pressman & Cohen, 2005).

One of the most studied illnesses in the domain of well-being is cardiovascular disease. In a meta-analysis by DuBois et al. (2015), 77 analyses of the effects of psychological well-being on cardiovascular disease were considered together. Of these dozens of analyses, the authors concluded that 65 percent of the analyses resulted in a significant association between constructs of well-being and positive outcomes in heart disease patients (namely decreased rehospitalization and/or mortality). Howell, Kern, and Lyubomirsky (2007) conducted a similar meta-analysis and found the positive associations of well-being to be even more pronounced in its impacts on the immune system response and pain tolerance than in cardiovascular patients. In their analyses of 150 studies, it was concluded that well-being, overall, has a positive impact on objective health outcomes.

Importantly, positive psychological well-being also has a predictive nature in health. For example, a longitudinal study by Hoyt, Chase-Lansdale, McDade, and Adam (2011) found that well-being in adolescence was significantly associated with better health outcomes and fewer risky behaviors in young adulthood. In their study, data from the National Longitudinal Study of Adolescent Health was used to examine the well-being and depressive symptoms of 11-20-year-olds and their health and health-related behaviors six years later. The results showed that well-being in adolescence predicted good health and low risky behavior tendencies in young

adulthood. Interestingly, their analyses indicate that certain positive characteristics, such as

happiness, enjoyment of life, and hope about the future, most strongly predicted the association.

Studies like this one point to the importance of well-being during key developmental periods for

positive health outcomes later in life.

        Another example of psychological well-being's predictive nature comes from a

remarkable twin study. Sadler, Miller, Christensen, and McGue (2012) explored the association

between well-being and increased longevity using data drawn from the Longitudinal Study of

Aging Danish Twins. Their study considered nearly 4,000 elderly twins – both monozygotic and

dizygotic – over a nine-year period. Well-being was self-reported at the beginning of the study

and morbidity was assessed using self-reported illness and five cognitive function measures.

Data on mortality rates of participants was also taken at the end of the study. The results showed

that well-being was associated with increased longevity. Further, within-pair analyses of the

monozygotic twins demonstrated well-being's association with increased longevity, deepening

our understanding of well-being's link to health to be more than genetics. Taken together, these

findings indicate that well-being is associated with health independent of genetic or

environmental factors. The authors conclude that while this association cannot point to

causation, their findings are consistent with a causal link between well-being and health later in

life (Sadler, Miller, Christensen, & McGue, 2012).

        Ong (2010) contributes to our understanding of well-being's predictive nature through a

review of the existing literature on morbidity and mortality, by suggesting possible pathways of

impact. While the author concludes that no single pathway can be identified, he proposes health

behaviors, physiological systems, stressor exposure, and stress undoing as potential key

pathways. For example, Ong (2010) uses the literature associating enduring positive emotions

and health-enhancing behaviors, such as healthy dieting and regular sleep, to propose health behaviors as an intermediate pathway for well-being's influence on positive objective health outcomes.

In conclusion, the relation between well-being and positive life outcomes is well-demonstrated in the existing literature. These empirical findings make a convincing case for the importance of considering and measuring well-being in the college context. Whether it be academic, career or health outcomes, well-being has demonstrable utility and predictive value. Where colleges set out to prepare students to succeed in life after graduation, well-being is a critical factor in students' success. Further, where students invest in a college degree with the goal of enhancing their life outcomes, well-being is key. For these reasons, a ranking of U.S. colleges based in measures of well-being would serve an important purpose.

Section Three

Introduction

The post-high school education path in the U.S. is varied. Some choose to continue their education with an associate's degree or technical training. Some choose to pursue a four-year bachelor's degree. Others enter the workforce, join the military, or travel. The reasons for these choices are as varied as the options themselves, and I believe it is important to call out, as part of this discussion, that no single choice "right". While my analysis focuses on the traditional-aged bachelor's degree student population, I recognize this path is not the only one, and I am not prescribing any one path over another. Instead, I hope to drill down into one component of one path in an attempt to better understand how we consider the well-being of this specific population.

Multiple factors influence a student's college search and decision-making process. A traditional-age student will typically begin the search process in the first part of the high school career. Along the way, factors such as conversations with alumni, campus visits, discussions with peers, guidance from school counselors and others will shape a student's decision-making. In this process, students will vary in their priorities. For some, location or family legacy may be a strong determinant of choice. For others, and particularly for students with less privilege, financial factors will drive the decision (Clarke, 2007). No one recipe for success exists in what is a deeply individualized choice.

In my own community and personal experience, college rankings dominated the college decision discussion. We, as students of a well-regarded public high school in the Midwest, were well aware of which schools had the best reputations and sought to secure acceptance letters from schools at the top of the rankings. Similar to rankings, other resources such as ratings or online review boards exist and were important data points we considered in relation to the rankings. As we can see, a multitude of resources and inputs exist for shaping a college choice. While recognizing that these resources are all influential and important factors in the same process, the scope of the present analysis will be limited to published lists that specifically rank colleges.

I will begin this section with an exploration of the current state of college ranking publications in the U.S. by analyzing the stated objectives and metrics of four popular rankings. I will then summarize research indicating an invisible hand effect of the rankings on the college institutions themselves. Finally, leveraging these findings, I will argue for the need of a new ranking that overtly and distinctly measures well-being.

Current State

       U.S. News and World Report. The *USNWR*, widely considered to be the first and most

prominent ranking of U.S. schools, has adjusted its metrics and reporting structure over the years

(Monks & Ehrenberg, 1999). What used to be a list of the top 10 schools is now a publication of

several lists, such as national universities, liberal arts colleges, graduate schools, online colleges

and global universities, each comprised of dozens of schools, and using data on up to 15

indicators. Each indicator is normalized and assigned a weight, as summarized in Table 1. The

ranking promotes itself as a resource that can help students and families make the important

decision of choosing a college. They say, "Your investment in a college education could

profoundly affect your career opportunities, financial well-being and quality of life." (Morse,

Brooks, & Mason, 2017). This publication collects its metrics as self-reported from the schools

themselves via an online platform (Morse & Mason, 2017).

       As demonstrated by the various weights assigned to the indicators, ratings made by

academics from peer institutions (presidents, provosts, etc.) and high school counselors, and

graduation and retention rates are the two most determinant variables of a school's rank on the

USNWR list (with each indicator receiving a 22.5 percent weight of the ranking). Graduation

rate, specifically, tell us the proportion of students who graduate from the school within six

years, and the first-year retention rate gives the proportion of first-year students who return the

next fall for their sophomore year. *USNWR* suggests these ratings alone indicate how capable a

school is of supporting students to succeed.

       In the case of measuring academic reputation, *USNWR* gives the rating power to high

school counselors and academics of peer institutions, purporting that these groups are in a

position to judge a school's reputation and account for intangible factors, such as faculty

dedication. However, a recent study by Bastedo and Bowman (2010) found that assessments of

academic reputation by these groups for the *USNWR* ranking are significantly influenced by

prior overall rank and tier of the school being judged, despite changes in the quality of the

school. This result is not surprising, considering the robust body of research around anchoring

and adjusting biases. As described by Tversky and Kahneman (1973), people make estimates

based on an initial value, not from a blank slate. This initial value anchors a person's decision-

making process and insufficient adjustments are made. In the case of peer rankings, this

phenomenon translates to previous rank biasing raters such that irrational judgments are made.

These finding points to a self-perpetuating cycle of measurement error within this indicator.

Also given high weight (20 percent) in the *USNWR* ranking are faculty resources, as

assessed by average class size, faculty pay, faculty education, student-faculty ratio, and

proportion of faculty who are full time. *USNWR* claims these measures indicate a school's

commitment to quality teaching. Here, we get a clearer picture for what this ranking considers to

be quality: class size, faculty prestige, and money spent on faculty. However, with such high

weight given to these assessments, it is easy to see how schools would weave into their

institutional strategy factors such as increasing faculty pay, as reported by Meredith (2004), in an

attempt to boost their place in the rankings. Further, these constructs do not directly guarantee

that a top-ranked school's well-paid, tenured faculty with small classes will deliver on the quality

teaching this metric is meant to measure.

In summary, *USNWR* is a popular and influential ranking of colleges riddled with

limitations. While it aims to help students and families choose a best-fit school and prepare for

success later in life, the ranking's structure and metrics present sever confounds. For example, in

an attempt to measure a commitment to quality teaching, the faculty pay factor has been shown

to influence schools to increase salaries without any real demonstrated impact on teaching

quality (Meredith, 2004). Further, in trying to indicate how capable a school is of supporting

students to succeed, *USNWR* limits itself to a measure of six-year graduation rate and peer

review ratings of academic reputation. These peer reviews are, perhaps, the most concerning

component. As described by Tversky and Kahneman (1973) and empirically demonstrated by

Bastedo and Bowman (2010), an anchoring and adjusting bias makes it such that prior overall

rank and tier of a school significantly influences these peer reviews, causing a self-perpetuating

cycle of measurement error. Here, these heavily-weighted factors fall short of their stated

objectives. For these reasons, consumers of the *USNWR* should pause to consider what the

ranking is actually telling them. In the case of the indicators described above, it appears to be

not much more than how well-ranked the school has been in the past and how far the school is

willing to go to manipulate the metrics.

     MONEY Magazine. *MONEY Magazine* offers its own best colleges ranking with factors

both similar and different to *USNWR*. This publication pronounces the objective of their ranking

to be to offer a look at the "broad strength" of institutions. It indirectly names high school

students as its target audience via the website headline: "College is a great investment—if you

choose the right school. Find your best college with rankings that combine educational quality,

affordability, and alumni success" (Best colleges for your money, n.d.). Their data sources are

the U.S. Department of Education, Peterson's College Data, PayScale.com, and its own

MONEY/College Measures calculations.

     As is summarized in Table 2, *MONEY* organizes the 27 factors that make up their ranking

into three categories: quality of education, affordability and outcomes. In the quality category,

six-year graduation rate and value-add graduation rate carry the most weight (each at 30

percent). Average standardized test scores of incoming freshmen, yield rate, student-faculty

ratio, and the financial health of the institution (such as funding challenges) together round out

the remaining 40 percent. Similar to *USNWR*, we again see financial indicators and six-year

graduation rate being used in a feeble attempt to measure quality.

The second category is affordability. Here, net price of a school's degree (30 percent)

and debt factors (20 percent), such as estimated average student debt upon graduation and

average amount borrowed through federal programs, make up the majority of this category. Also

included are measures of student loan default, value-added student loan repayment measures, and

net price for families earning under $30,000.00 per year.

The outcomes category of the *MONEY* is arguably the most distinguishing aspect of this

ranking's methodology. Given the most weight in this category is the socio-economic mobility

index (20 percent), which measures the percentage of low-income students who are able to move

into upper-middle class jobs by the time they are 34 years-old. A measure of early- and mid-

career earnings adjusted by major (15 percent), and early- and mid-career earnings of graduates

with only a bachelor's degree (10 percent) are also given high priority in this category. Here,

MONEY distinguishes itself from other rankings with an attempt to capture the return on

investment of a degree from each institution. Particularly in situations where cost is a

determinant and earnings are a desired outcome, this ranking is offers relevant data. Still, this

outcomes category is limited to income indicators and makes up only a minor part of the overall

ranking. The remaining factors do not differ wildly from what is measured and reported in

USNWR (six-year graduation rate, class size, etc.).

Princeton Review. As is summarized in Table 3, *The Princeton Review* takes yet another

approach to college rankings. Where *USNWR* and *MONEY* rank hundreds of schools straight out

against each other on multiple metrics, *Princeton Review* ranks the top 20 schools of a single

metric across 62 different metrics. These metrics and their related lists spread across several

categories, including academics, campus life, extracurriculars, social scene, and quality of life.

Naturally, of interest to this discussion is the quality of life category. Here, *The

Princeton Review* has a list for happiest and least happy students, most and least beautiful

campus, best and worst campus food, best and worst college dorms, and best quality of life. In

all but the last case, the rankings are based on student responses to a single item questionnaire

related to the topic, such as "I am happy at my school". The best quality of life ranking is based

on student responses from a multi-item questionnaire, such as ratings of the "beauty, safety and

location of their campus, their campus dorms and food, their ease in getting around the campus

and in dealing with the administration, the friendliness of fellow students and interactions among

different student types on campus and their overall happiness" (The Princeton Review's College

Ranking, 2018). While the quality of life ranking is more robust in its metric quality than the

others of the category, these lists offer a limited, single-dimension view of well-being. What

they do indicate, however, in the fact that they are published year after year is that quality of life

is of consideration to students choosing a school.

The *Princeton Review's* most concerning shortcoming is its singularity in measurement

approach. As is discussed by Duckworth and Yeager (2015), self-report measurements come

with serious limitations. These limitations include respondents falsifying their answer to be

more socially desirable, misinterpretation, lack of insight into the construct being measured, and

reference bias. In the case of between-school and over-time comparisons, the authors conclude

that self-report questionnaires may actually produce opposite findings (Duckworth & Yeager,

2015). When not balanced by other approaches, as is the case with the *Princeton Review*

rankings, the outcomes of the measurement are questionable at best.

      Wall Street Journal/Times Higher Education. Relatively new to the college ranking

scene is the Wall Street Journal/Times Higher Education (*WSJ/THE*) ranking. Here, data comes

from numerous sources including the Integrated Postsecondary Education Data System, the U.S.

Department of Education's Federal Student Aid Center, the College Scorecard and the Bureau of

Economic Analysis, and the publication's own *Times Higher Education* U.S. Student Survey.

The publication specifically claims its objective is to help students and their families choose a

college. In the same proclamation, it attempts to distinguish itself as representing the "heart and

voices of more than 200,000 current American college students" (Wall Street Journal/Times,

2018).

      As seen in Table 4, this ranking uses a balanced scorecard approach, with 15 individual

performance indicators across four categories (resources, engagement, outcomes, and

environment) combined to create an overall score. In the resources category, the publication

aims to measure how well suited the college is to effectively teach. Representing 30 percent of

the overall ranking, this category considers finances per student, the faculty-to-student ratio, and

the number of research papers published per faculty.

      In the engagement category, the publication aims to measure how well the college

engages with its students. Representing 20 percent of the overall ranking, this category considers

student engagement (as measured by answer to four questions: 1) To what extent does the

student's college or university support critical thinking? 2) To what extent does the teaching

support reflection on, or making connections between, the things that the student has learned? 3)

To what extent does the teaching support apply the student's learning to the real world? 4) To

what extent do the classes taken in college challenge the student?), student recommendations (as measured by responses to the question: "If a friend or family member were considering going to university, based on your experience, how likely or unlikely are you to recommend your college or university to them?"), interactions between students and teachers (as measured by answers to two questions: 1) To what extent did the student have the opportunity to interact with faculty and teachers? (for example, talking about personal progress in feedback sessions); and 2) To what extent does the college provide opportunities for collaborative learning?), and the number of accredited programs.

The outcomes category aims to measure the value-add for the students who attend the colleges. Representing 40 percent of the overall ranking, this category considers graduation rate, value added to the graduate's salary, value added to loan default, and academic reputation (as measured by a poll of scholars used to determine which institutions have the best reputation for excellence in teaching, similar to the *USNWR*). Finally, the environment category aims to measure the quality of the learning environment. Making up just 10 percent of the overall ranking, factors include student and staff diversity, inclusion, and proportion of international students.

Resources, engagement, outcomes, and environment are all certainly important factors of a college experience. However, the construct validity of these measures is arguably weak. In the case of engagement, particularly, the lack of rigorous empirical validation of the questions leaves the data questionable. Again, we have the concern of anchoring and adjusting biases interfering with the validity of an academic reputation measure. Further, we again see a great deal of overlap in indicators with the other rankings, marking a lack of original information among

publications. *WSJ/THE's* differentiating factors such as diversity and inclusion are given minimal importance.

      Summary. Taken together, we can observe the general objectives and priorities of current, popular college rankings in the U.S. Popular indicators include measures of student debt and income, student-to-faculty ratios, and subjectively-measured reputation and prestige. Any measures related to well-being are feeble, at best. Further, these existing rankings carry with them severe limitations in validity, particularly in the cases of self-report questionnaires that lack any sort of empirical validation, and the bias-laden institutional peer reviews of academic reputation.

      Critically, an overt measure of well-being is notably missing from the current ranking landscape. At organizations from the Fortune 500s, to the Bill and Melinda Gates Foundation and beyond, the saying "We care about what we measure, and measure what we care about" holds as an enduring reality. Adopting this verity, if we care about well-being, we must measure it. As has been demonstrated in the previous section, well-being is worth attending to, and in the above analyses of the current state of U.S. college rankings, there exists an obvious opportunity for the measurement and ranking of well-being.

Table 1: *U.S. News and World Report*

Stated Objective	"To help students find a college that's a good fit. The rankings provide a good starting point for students trying to compare schools… based on factors that indicate academic quality."
Data Source	1. Self-reported from schools via an online platform
Metrics	**22.5%: Graduation and retention rates** • Six-year graduation rate (80%) • First-year retention rate (20%)
	22.5%: Undergraduate academic reputation • Academics from peer institutions (presidents, provosts, etc.) and high school counselors are asked rate a schools' academic programs on a scale from 1 to 5 (marginal to distinguished). These ratings are averaged to create a score.
	20%: Faculty resources • Class size (40%) • Average faculty pay plus benefits, adjusted for regional differences in the cost of living using (35%) • Proportion of professors with the highest degree in their fields (15%) • Student-faculty ratio (5%) • Proportion of faculty who are full time (5%)
	12.5%: Student selectivity • Admissions test scores for all enrollees who took the SAT critical reading and math portions and the composite ACT (65%) • Proportion of enrolled first-year students who graduated in the top 10% of their high school classes (25%) • Acceptance rate or the ratio of students admitted to applicants (10%)
	10%: Financial resources • Average spending per student on instruction, research, student services and related educational expenditures.
	7.5%: Graduation rate performance • The difference between a school's six-year graduation rate for the class that entered eight years prior to the ranking and the predicted for the class by U.S. News.
	5%: Alumni giving rate • Percentage of living alumni who donated to their alma mater.

Source: https://www.usnews.com/education/best-colleges/articles/how-us-news-calculated-the-rankings

Table 2: *MONEY Magazine*

Stated Objective	"College is a great investment—if you choose the right school. Find your best college with rankings that combine educational quality, affordability, and alumni success"
Data Sources	1. U.S. Department of Education 2. Peterson's 3. PayScale.com 4. MONEY/College Measures
Metrics	**33.3%: Quality of education** • Factors including six-year graduation rate, difference between the school's actual graduation rate and the expected rate, yield rate, standardized test scores, student to faculty ratio, financial difficulties of the school.
	33.3%: Affordability • Factors including net price of a degree, average student debt upon graduation, average amount borrowed by parents, student loan repayment and default risk, loan repayment performance based on the academic and economic profile of the student body, and affordability for low-income students.
	33.3%: Outcomes • Factors including graduates' earnings, earnings adjusted by major, earnings of federal financial aid recipients ten years after starting college, estimated market value of average job skills, value-add earnings, job meaning, percentage of students each school move from low-income backgrounds to upper-middle class jobs by the time the student is 34 years-old.

Source: https://www.usnews.com/education/best-colleges/articles/how-us-news-calculated-the-rankings

Table 3: *Princeton Review*

Stated Objective	"*The Princeton Review* reports the top 20 schools (of the 382 in the book) for each of its 62 different ranking list categories—but does not report ranks beyond the top 20 in any category." The eight categories into which these 62 rankings fall are: 1. Academics/Administration 2. Quality of Life 3. Politics, Campus Life 4. Town Life 5. Social Life 6. Extracurriculars 7. Social Scene 8. Schools by Type
Data Source	1. Self-reported student questionnaires
Metrics	In most cases, the ranking is determined by average scores from student responses to a single-item questionnaire related to the topic of each specific ranking. For example, the Happiest Students and Least Happy Students rankings are determined by self-reported agreement ratings to the statement "I am happy at my school."

Source: https://www.princetonreview.com/college-rankings/ranking-methodology

Table 4: *Wall Street Journal/Times Higher Education*

Stated Objective	To represent "heart and voices of more than 200,000 current American college students"
Data Source	1. The U.S. government's Integrated Postsecondary Education Data System 2. The US Department of Education's Federal Student Aid center 3. The College Scorecard 4. Bureau of Economic Analysis 5. *Times Higher Education* U.S. Student Survey 6. *Times Higher Education* Academic Reputation Survey 7. Elsevier's bibliometric dataset
Metrics	**Financial capability (11%)** • Spending per student on both undergraduate and graduate programs
	Teaching quality (11%) • Faculty to student ratio
	Faculty research productivity (8%) • Published research papers per faculty
	Student engagement (7%) • Answers to four questions: 1) To what extent does the student's college or university support critical thinking? 2) To what extent does the teaching support reflection on, or making connections between, the things that the student has learned? 3) To what extent does the teaching support apply the student's learning to the real world? 4) To what extent do the classes taken in college challenge the student?
	Student recommendation (6%) • Responses to the question: "If a friend or family member were considering going to university, based on your experience, how likely or unlikely are you to recommend your college or university to them?"
	Interaction with teachers and students (4%) • Responses to two questions: to what extent did the student have the opportunity to interact with faculty and teachers? (for example, talking about personal progress in feedback sessions); and to what extent does the college provide opportunities for collaborative learning.
	Offerings and opportunities (3%) • Number of accredited programs
	Graduation rate (11%)
	Value added to graduate salary (12%) • How much higher or lower the average graduate salaries are than would be predicted based on the characteristics of the student body.

	Value added to loan default (7%) • How much higher or lower the average graduate's ability is to repay loans than would be predicted based on the characteristics of the student body.
	Academic reputation (10%) Results from a poll of scholars used to determine which institutions have the best reputation for excellence in teaching.
	Proportion of international students (2%) • Ability of an institution to attract international students, offering a multicultural campus where students from different backgrounds learn from each other.
	Student diversity (3%) • Student racial and ethnic diversity
	Student inclusion (2%) • Proportion of students who are first-generation students
	Staff diversity (3%) • Faculty racial and ethnic diversity

Source: https://www.timeshighereducation.com/wall-street-journaltimes-higher-education-college-rankings-2018-methodology

The Invisible Hand

Multiple college rankings have come onto the scene over roughly the last 30 years. While rankings such as these overtly aim to impact the student, studies have also demonstrated their profound impact on the colleges themselves. In a foundational study on the effects of the *USNWR* college ranking on admissions outcomes and tuition, Monks and Ehrenberg (1999) found that a school's ranking in the *USNWR* led to changes in acceptance rates, matriculation rates, and applicant quality. In an effort to focus their analysis on the schools that receive the most attention on this ranking, the authors focus their analysis on the universities and colleges ranked at the top of the list. In the analysis, they took data from 30 of the top-ranked schools on admissions outcomes and pricing policies for students entering the school in the 1988/1989 (the first publication of the *USNWR* ranking) to 1998/1999 school years to determine changes in these factors as related to changes in rank. The results showed that moving down even just one rank (as in, closer to the top of the list) led to a significant increase in the school's admission rate.

Further, the reverse effect was found for schools moving up in the rankings. This first finding

demonstrates an effect of the ranking on a school's ability to be selective in admission.

In terms of matriculation, a lower ranking was associated with a lower yield of admitted

students, which is related to the first finding of why schools lower in the rankings simply admit

more students. When it comes to applicant quality, schools are constantly striving to attract

students from the top of the talent pool. As measured by average SAT scores of a school's first-

year class, the analyses showed that an improvement in rank also leads to improved applicant

quality. Fortunately for those students and their families, the analyses showed that changes in

rank did not seem to affect a school's tuition price. The authors suggest this lack of effect could

be due to the fact that schools use tuition as an indicator of academic quality and would not want

to indicate a decline in quality with reduced tuition prices. However, schools that move down in

rank tend to expect less student contribution to tuition payments and provide their students with

more generous financial aid (Monks & Ehrenberg, 1999). In summary, an institution that

improves its ranking sees an increase in applications, yield rate, and average freshmen SAT

scores, a decrease in acceptance rate, and needs to spend less on tuition aid to attract those

students.

Since this foundational analysis, several studies have corroborated and nuanced these

results. In 2004, Meredith analyzed the effects of the *USNWR* ranking on admissions outcomes

for different demographics and institution type. The results of his analyses, which considered

data from *USNWR* issues from 1991 to 2000 and tuition data taken from the 1999 and 2000

Princeton Review *The Best 311 Colleges* guidebooks, indicated that movements between the first

two quartiles of the ranking had the strongest impact on admissions outcomes, relative to

movements within the first quartile. Further, he found that the rankings affected admissions

outcomes, as measured by SAT scores, acceptance rate and proportion of students in the top ten

percent of their class, more significantly with public than private schools. For example, moving

from the second to first quartile lowers the acceptance rate by four percent in public schools but

only 1.35 percent in private schools. Bowman and Bastedo (2009) conducted a separate analysis

that corroborated Meredith's results, demonstrating that a change in ranking is most impactful

for any school moving from the second to first quartile. Based on the observed changes in

proportion of incoming freshmen who graduated in the top ten percent of their high school class

and overall application rates, these authors suggest that the effect of being on the front page of

the ranking (by being in the first quartile) has a way of promoting that school.

In 2002, Ehrenberg followed-up his foundational analyses with a paper investigating the

ways in which the *USNWR* ranking exacerbates competitiveness among schools and how those

schools attempt to influence their ranks. He begins by pointing out ways in which schools

consider the *USNWR* ranking in their strategic planning process. For example, Ehrenberg cites a

real-life scenario in which a school chose to allocate funds to faculty salaries (a heavily-weighted

USNWR metric) to improve its ranking without explicitly considering if the funds could be better

used with the goal of improving educational experiences. Stories like this point to the influence

the *USNWR* has on institution-level strategy and decisions.

Ehrenberg concludes that, although the *USNWR* methodology incentivizes schools to take

socially undesirable actions, such as allotting extra funds to faculty salary instead of more overt

education-enhancing outlets, it does not necessarily penalize schools for cooperating in ways that

improve opportunities and outcomes for their students. For example, the 15 schools that make

up the Associated Colleges of the South created a virtual department of courses in the classics,

which allowed them to share teaching resources, streamline the teaching of foundational courses,

and allow faculty to offer more electives. This consortium, in turn, enhanced the education

opportunities for students at all institutions. Because the *USNWR* does not measure courses

taught by faculty from other institutions or distance-learning opportunities, schools do not need

to consider the impact of collaborations on their place in the ranking. This analysis points to the

importance of considering second-hand or unintended consequences of the metrics in these

rankings.

      While the *USNWR* states its objective as being a helpful resource to students in the

process of choosing a college, these studies demonstrate the effect of the rankings on the schools

themselves. This invisible hand effect is clearly powerful and deserves pause to consider what

else could be measured for the applicant pools to consider so that the schools, in turn, pay

attention to those particular metrics.

Future State

      Based on what we know about the utility of well-being, the current state of college

ranking publications in the U.S., and the invisible hand effect they have on the institutions

themselves, I propose the need for a new ranking of colleges that overtly and distinctly measures

well-being. My hope is that a well-being ranking of colleges would be another piece of this

college-decision puzzle: a complement, not substitute. Instead of replacing current rankings or

other decision factors, this ranking would add an important new factor to the equation, a factor

that is missing in our current situation. While the existing rankings can tell us something about

how well-functioning an institution is, they are missing valuable information on well-being-

related outcomes. Now that the case has been made for the utility and opportunity for such a

ranking, the discussion will turn to an exploration of how such a ranking could be comprised.

Section Four

Introduction

Having made the case for why, the discussion now turns to the how. In this section, I will explore leading and cutting-edge methods of measuring well-being and present recommendations for a way that these different measurements could come together to create a well-being ranking of colleges. The purpose of this proposal is to offer a starting point for such a measurement. It is my hope that through trial and experience, the validity and reliability of this ranking will be honed and improved over time.

Big Data

Big data is a relatively new phenomenon in which exceptionally large data sets are analyzed using special processes. Increasingly, we are seeing components of well-being measured on these large scales, particularly in the area of healthcare. For example, Google has begun leveraging big data to predict mortality using information from electronic health records (Rajkomar et al., 2018), and Google's Flu Trends predicts and monitors geographically-specific flu outbreaks based on frequency of flu-related Google searches, enabling the illness to be more effectively prevented and treated (Ginsberg et al., 2011). In other domains, big data analytics have even been used to predict trends such as a movie's success at the box office (Asur & Huberman, 2010), and changes in language usage in literature over the last 200 years (Michel, et al., 2011).

Recent advances in leveraging social media data sets have also influenced the utility of big data analyses. Using content from social media platforms, such as Twitter and Facebook, social scientists have been able to create psychological profiles of large populations. For example, big data has been used to measure well-being across geographies. In a study by

Schwartz et al. (2013), the well-being of 1,300 U.S. counties was predicted and distinguished

using content from Twitter posts. In their study, tweets were associated with different counties

using Twitter's free-response location field. This information tagged a tweet to a particular city

or location, allowing that content to be categorized as coming from a particular county. The

authors then used a differential language analysis to measure language characterized by

subjective well-being in each county. Specifically, they leveraged a custom PERMA-related

lexicon to measure the percentage of a county's words related to each well-being domain.

Additionally, topic usage was measured using content from 18 million Facebook status updates.

These data were compared to a control group made up of existing predictors of well-being,

specifically the demographic and socio-economic status (SES) indicators of age, sex, minority

status, median household income, and educational attainment.

The results were monumental. When tested against existing county-level life satisfaction

data, the big data measurements indicated language's ability to predict well-being and to

contribute to the information gleaned from the traditional demographic and SES indicators. For

example, language related to physical activity, seeking counsel, prosocial behavior, and

engagement predicted well-being across counties. Other indicators included spirituality,

learning, recreational activities, and life experiences. Negatively correlated with well-being were

words having to do with poor health, boredom, and stress (Schwartz et al., 2013). Where

traditional well-being indicators of SES and demographics are shown to be predictive of well-

being, this study shows the ability of language and big data to deepen and detail our

understanding of the differences in well-being across geographies. Using existing social media

content and big data methodologies, these authors were able to unobtrusively and relatively

inexpensively predict the well-being of millions and better understand the specific underlying factors.

This use of big data to measure well-being in large populations has since trickled into other domains. For instance, Honkela, Korhonen, Lagus and Saarinen (2014) used the PERMA lexicon and a sentiment analysis to measure the well-being of written text across a handful of different genres (Grimm brothers fairytales, Enron corporate e-mails, news feeds from the Finnish news agency STT and Reuters, Wikipedia articles on topics beginning with the letter A, proceedings from the 1996 European Parliament, and conversations collected at the University of California – Santa Barbara). The authors created a "PERMA profile" for each of these genres using a sentiment analysis combined with the PERMA lexicon. This fusion produced an output made up of sentiment ratings (between +1.0 and -1.0, with 0.0 being neutral, +1.0 being all positive sentiment, and -1.0 being all negative sentiment) on each of the five well-being domains.

The differences in profile qualities across the various genres revealed several findings. First, measurable differences were identified in each of the five well-being domains within each profile. For example, STT ranked below zero on positive emotion but far above zero on achievement. Second, there were measurable differences in each of the five well-being domains across the profiles. For instance, the content from the news organizations were markedly more negative than the rest of the genres in most domains. These variations in discourse, the authors posit, can help tell the story of their sources. In the case of Enron, which ranked the lowest in the meaning domain, the authors wonder if part of this organization's demise could be linked to their lack of focus on meaning (Honkela et al., 2014).

A key limitation of this analysis is its English-specific nature. These authors point out how more complex languages, such as Finnish in the case of STT, can lose their nuances when translated into English, as they were in the case of this analysis. To attempt to account for these translation challenges, the authors explored the possibility of adding to the existing PERMA lexicon by categorizing worlds based on lexical relation. They propose these additions be used to reevaluate the PERMA lexicon in an attempt to make it more generalizable across different languages.

Taken together, these empirical examples indicate big data's ability to measure the well-being of large populations in real time and in a relatively simple, cost-effective, and unintrusive manner. Limitations include language-specific analyses, inaccuracy of free-response location field information, social media being used less in older generations than younger ones, and the political disenfranchisement of social media in some governments (Adler & Seligman, 2016). However, considering the growing popularity of social media and increase in the world's access to internet, I expect to see this method of measurement expand.

Behavioral Measures

Behavioral measures have also seen recent progress with leveraging technology. In the education domain, Galla et al. (2014) were able to predict important indicators of academic success and attrition using the Academic Diligence Task (ADT). The ADT is an online platform that allows students to choose between spending their time on solving math problems (the diligent task) and playing games or watching videos. In their study of 921 U.S. high school seniors, performance on the ADT (as measured by productivity and time spent on the diligent task) was shown to be related to the well-being constructs self-control and grit. Further, ADT performance was shown to be stronger at predicting academic outcomes (such as GPA,

graduation rates, and college enrollment) than traditional indicators (such as demographics, intelligence, and attitudes towards math). Online behavioral measures, such as the ADT, demonstrate the usefulness of online behavioral measures to predict academic outcomes. Further, they provide another way of measuring well-being in a relatively unintrusive and resource-conscious way.

Self-Report Questionnaires

Self-report questionnaires are the more traditional method for measuring well-being constructs. Throughout the history of study of well-being, a multitude of measures have entered the scene. Here, I will explore the similarities and differences of the more well-regarded and empirically-sound of these many measurements.

Satisfaction with Life Scale. Life satisfaction is a global assessment of overall quality of life (Shin & Johnson, 1978). The Satisfaction with Life Scale (SWLS) is a five-item measure of life satisfaction, focused uniquely on a person's own judgements of what makes for a satisfying life (Diener, Emmons, Larsen, & Griffin, 1985). Specifically, the test measures agreement with the following items on a seven-point scale:

1. In most was my life is close to my ideal.

2. The conditions of my life are excellent.

3. I am satisfied with my life.

4. So far, I have gotten the important things I want in life.

5. If I could live my life over, I would change almost nothing.

The authors of the measure point out the scale's unique ability to measure what is subjectively valued by each individual, as opposed to overtly measuring against values imposed by others (Diener et al., 1985). This attribute eliminates the impaired validity that can come from

measuring based on outside criterion judged important by someone other than the respondent. Empirical research has also shown that the scale correlates highly with subjective well-being measures, and that satisfaction with life may be a more stable measure of well-being than affective measures because they are not as influenced by the mood of the current day (Diener et al., 1985).

Positive and Negative Affect Schedule. The Positive and Negative Affect Schedule (PANAS) is a 20-item measure of two dimensions of mood: positive affect (the extent to which a person experiences moods related to being enthusiastic and alert) and negative affect (the extent to which a person experiences moods related to being angry, disgusted and fearful) (Watson, Clark & Tellegen, 1998). Importantly, these two constructs are independent of each other, not opposite ends of the same affect continuum, which is why the PANAS includes 10 items for each. This distinction allows for a more complex and thorough understanding of a person's affective state.

PERMA Profiler. In an effort to measure flourishing within the popular PERMA framework, Butler and Kern (2016) offer and empirically validate a 23-item scale of well-being in which each of the five domains is measured with three separate items. Eight additional items measuring constructs such as loneliness and physical health are added as filler. The PERMA Profiler – Short Form version of the scale eliminates the eight fillers, shortening the scale to 15 items. The authors point out the benefit of a more meaningful, nuanced understanding of well-being created by measuring each domain in a multi-dimensional way.

Comprehensive and Brief Inventories of Thriving. Su, Tay, and Diener (2014) attempt to represent a more holistic view of positive functioning in their two related inventories: the Comprehensive Inventory of Thriving (CIT) and the Brief Inventory of Thriving (BIT). The

54-item CIT measures psychological well-being by having respondents rate agreement on a 5-point scale to phrases such as "My life has a clear sense of purpose". The BIT accomplishes the same purpose with 10 items. The CIT and BIT are designed to indicate psychological well-being in seven core dimensions: subjective well-being, relationships, meaning, engagement, mastery, optimism, and autonomy. Interestingly, five of these dimensions directly correspond to the PERMA domains (subjective well-being, engagement, relationships, meaning, and mastery, respectively), but go beyond those core five to offer a more holistic representation of thriving with the addition of optimism and autonomy. In a study of over 3,000 U.S. participants of a variety of demographics, scores on the CIT and BIT were shown to predict critical health indicators, such as physical illness, exercise habits, eating habits, and mental health (Su, Tay, and Diener, 2014).

Occupational Satisfaction. Of natural interest to potential and current college students is the occupational satisfaction of a school's graduates. How happy are these people in their jobs later in life? Occupational satisfaction is most commonly measured with a three-items scale originally made popular by Price and Mueller (1986). Using a five-point rating, occupational satisfaction is measured on the following dimensions:

1. All in all, how satisfied are you with the work itself of your job?

2. All in all, how satisfied are you with your coworkers?

3. All in all, how satisfied are you with your supervision?

Proposed Approach

As we have observed, popular college rankings generally are made up of multiple measures. Each of these measures is given a different weight (i.e. degree importance) in the

overall score. In the following discussion, I will propose an approach for measuring and ranking

U.S. colleges based on well-being, leveraging the above discussed measurement techniques.

To begin, I propose a component of the well-being ranking of U.S. colleges come from a

big data approach. Specifically, the approach would be a sentiment analysis of the five domains

of PERMA using content from social media posts geolocated to each college. Combining the

methods of Schwartz et al. (2013) and Honkela, Korhonen, Lagus, and Saarinen (2014), I

suggest linguistic content be collected from social media, such as Instagram, Facebook, and

Twitter posts, tied to each of the colleges being considered with free-response location fields.

The analysis of this content would be a sentiment analysis using the PERMA lexicon, the output

of which would be a score (+1.0 to -1.0) on each of the five domains of well-being. These five

rankings could be aggregated to create an overall well-being score for that college.

To understand even better the factors influencing the well-being of each school

community, word clouds could be generated in which popular words used in the content

collected from each school are clustered together, with word size corresponding to prevalence

(Schwartz et al., 2013). These word clouds would create a more visual representation of the

well-being profile of each school, helping prospective students and their families better

understand what specific factors are enabling students at those schools to flourish.

Limitations of this measurement would mirror the limitations found in the studies cited

above. Specifically, the English-specific nature of the PERMA lexicon, and the potential for

people to elect false information in the geolocation field. However, the ability to collect such a

large amount of real-time data in an empirically-validated manner should not be overlooked.

Further, it is my hope that advances in big data analyses with social media content will solve for

these limitations in the future.

Still, big data analyses cannot stand alone. As noted by Duckworth and Yeager (2015), a plurality in approaches strengthens measurement validity. In addition to big data, I propose behavioral measures of well-being be factored into the ranking. Performance of students across schools on the ADT would add a useful measure predicting academic success above and beyond the tradition indicators accounted for in the existing landscape of college rankings. As discussed in the previous section, performance on the ADT is related to well-being constructs, such as self-control and grit, so leveraging this measurement would further enhance our understanding of student well-being.

To further enhance the validity of the ranking, I propose data from self-report questionnaires also be factored into the methodology. While the proposed big data method would capture the well-being of the entire college community (i.e. all people who self-select into the geolocation), the questionnaires would provide the opportunity to be more targeted in data collection. I recommend three audiences be surveyed: students, educators, and alumni. Each of these sources would add an important and pointed dimension to the consideration of well-being in a college community. Student data would tell us the well-being of those who currently attend the school. Alumni data would indicate differences in well-being of those who matriculate from the different colleges. Finally, data on educator well-being would add an additional and relevant dimension to the self-report indicator of a ranking. Educators are widely considered to be the psychosocial hubs of the wheels of the education system. The well-being of a school's faculty is already often examined in conjunction with the well-being of their students (Kern, Waters, Adler, & White, 2014).

As discussed above, a plethora of scales exists from which to consider. With the big data and PERMA lexicon methodology as the ranking's base, I recommend the PERMA Profiler

be administered to the three target populations. Doing so would fold into and enhance the conclusions drawn from the PERMA big data analyses. By considering PERMA through the lenses of big data and self-report questionnaires together, the ranking would offer a robust view of a college's well-being levels in five separate domains.

Additionally, I recommend the five-item SWLS be administered to the three target populations. Where the PANAS data would somewhat overlap with the construct being measured in the PERMA Profiler (specifically, the "P" dimension), the SWLS would offer a new yet related dimension to the ranking with its specific focus on life satisfaction. Further, this scale adds value in its ability to measure what is subjectively valued by each individual and its strong correlation to measures of subjective well-being, which are both important factors to consider in this context.

Finally, I recommend occupational satisfaction of alumni be measured and incorporated into the ranking. As previously mentioned, college degrees are often pursued with the purpose of achieving success in a certain profession. By measuring and comparing the occupational satisfaction of alumni across schools, we can help potential applicants better understand the well-being of in this specific domain.

In summary, I recommend a well-being ranking of U.S. colleges be measured with the following metrics: big data analyses of social media content, the Academic Diligence Test, the PERMA Profiler and SWLS data of students, alumni and educators, and the occupational satisfaction of alumni. Table 5 indicates rough potential weights to be given to each of these components. Taken together, the PERMA-related measures would comprise of a majority of the ranking, making the measure rooted in this framework. As other domains seek to measure well-

being across populations, other frameworks may prove to be more fitting. In this case, PERMA

offers a robust yet concise way of understanding well-being in the college context.

Table 5: Proposed Well-Being Ranking

Stated Objective	Enable students to choose a life of flourishing and encourage schools to better support the well-being of their communities.
Data Sources	1. Social media (Facebook and Twitter) content 2. Online behavioral measures (ADT) 3. Student, alumni, and educator self-report questionnaires
Metrics	**50%: PERMA Profile (Big Data and Self-Report)** Comprised of six subscales (one for each PERMA domain plus one aggregate), this indicator will measure the level positive emotions, engagement, relationships, meaning, achievement, and overall well-being of each college community using a combination of two methodologies: big data analyses on geolocated social media content and student, alumni, and educator responses to the PERMA Profiler. The information from the big data analyses could additionally be leveraged to create a well-being word cloud for each college.
	25%: Life Satisfaction Comprised of student, alumni, and educator responses to the Satisfaction with Life Scale, this indicator will measure global assessment of overall quality of life in a way that considers what subjectively valued by each individual.
	15%: Alumni Occupational Satisfaction Measured by alumni responses to three popular indicators of occupational satisfaction, this indicator will measure how happy these former students are in their jobs after graduation.
	10%: Academic Diligence Task (ADT) An online behavioral measure, the ADT assesses noncognitive individual differences that predict academic outcomes. Performance on the ADT is also related to both grit and self-regulation.

Section Five

Fortunately, for those interested in this pursuit of measuring and improving well-being in

the education domain, the slate is not blank. In fact, it is colored with growing and convincing

body of research on methods for building well-being. In this final section, I will explore and

summarize evidence-based interventions for enhancing well-being. Instead of blindly attempting

to improve well-being or recreating the wheel, I recommend individuals and institutions alike draw from these existing practices.

Shown to be one of the most powerful well-being interventions (in terms of its effect on an individual's happiness and depression levels) is the "gratitude visit", in which participants write a letter of gratitude to someone who has been especially kind. The letter is then actually delivered in-person by the writer. In a study of 577 participants, completing the gratitude visit exercise led to improved happiness and decreased depression both immediately after and one month later (Seligman, Steen, Park, & Peterson, 2005). According to Lyubomirsky (2007), expressing gratitude can be exercised in multiple ways, including journaling about blessings or directly communicating gratitude to others. The outcomes of such exercises, she posits, are also multiple. Gratitude promotes savoring, improves self-esteem, defends against stress, and fosters social bonds. It encourages moral behavior, bars against bitterness, and has the ability to avoid hedonic adaptation (Lyubomirsky, 2007).

Mindfulness practice presents another well-documented positive education intervention. According to Davidson, et al. (2003), even just a few short practices of meditation have been shown to produce significant increases in immune system functioning, as well as increased positive affect at the neural level. In their study of 25 participants who participated in an eight-week mindfulness training program, practicing meditation was shown to significantly increase instances of antibodies to the flu and certain brain activations associated with positive affect, as compared to a control group. Educators have already begun leveraging this powerful technique with students with the goal of increasing positive emotion, self-awareness, and well-being (Adler & Seligman, 2018).

As is summarized in Table 6, other well-documented individual interventions for well-being include the "three good things" exercise in which participants write three things daily that went well and the causes of those good things (Seligman, Rashid, & Parks, 2006), the "signature strengths" exercise in which participants take an inventory of character strengths and use their top strengths in a new way each day (Peterson & Seligman, 2004), and the "best self" exercise in which participants write down a time they were at their best and reflect on the personal strengths leveraged in that situation (Roberts, Dutton, Spreitzer, Heapy, & Quinn, 2005). What I find especially compelling about these interventions is that they empower individuals with simple, cost-sensitive ways of improving their own well-being. Armed with easily-implemented interventions such as these, individuals have the ability to increase their ability to thrive. For this growth to begin, we simply need to put these tools in their hands, and what better place to do so than in schools?

The positive education movement has set out to do just that. This field of study and applications grounds itself in the understanding that well-being is skill-based and teachable (Adler & Seligman, 2018). Excitingly, positive education has taken root in just about every corner of the globe. In Bhutan, a small Asian country that measures Gross National Happiness (GNH), the education system was recently reorganized around principles of GNH. The impact on student well-being and academic outcomes was significant. In these schools where teachers received training on how to teach their existing subjects through a lens of positive psychology (such as using novels to identify character strengths and giving empowering feedback on assignments), the academic outcomes and well-being of the students were positively impacted in lasting ways. Above and beyond academic success, students were shown to experience higher

rates of pro-social behavior and physical health, and lower absenteeism and drop-out rates (Adler, Seligman, Tetlock, & Duckworth, 2016).

The aforementioned Geelong Grammar School in Australia has established an institute dedicated to training educators on positive-psychology-based teaching techniques. The institute provides teachers with immersion courses on topics such as flow, positive relationships, gratitude, resilience, purpose, curiosity, hope, and meaning, among others. With PERMA as its foundation, Geelong's positive curriculum is structured around three pillars. The first is "live it", in which staff are trained on and supported in their own well-being. In "teach it", those staff members overtly teach students about the theories and tools for well-being. Finally, in "embed it", school processes are structured to include positive psychology. For example, schools have "what went well" boards to enable the practice of expressing gratitude. A longitudinal study demonstrated how Geelong students experienced improved mental and physical health, increased levels of meaning, hope, and positive relationships, and higher amounts of happiness, gratitude, and life satisfaction, as compared to control conditions (Adler & Seligman, 2018).

The path to a life of flourishing does not need to be journeyed alone. These examples of positive education in action provide those looking to increase their well-being (at both the individual and institutional levels) with a robust menu of evidence-based interventions. It is on the backs of these pioneering greats that we can carry forward the charge of leveraging education systems to provide students with the tools for improving their opportunities for a life of flourishing.

Table 6: Sample Positive Interventions

Intervention	Description	Effects
Gratitude visit	Write a letter of gratitude to someone who has been especially kind and deliver that letter in-person.	Improve happiness and decrease depression through expressing gratitude.
Three good things	Document and describe the cause of three good things that happen each day.	Promote savoring, improve self-esteem, defend against stress, and foster social bonds.
Signature strengths	Use character strengths in a new way each day.	Increase school engagement and satisfaction in life, learn to identify strengths in others.
Emotional coping	Identify, understand, and manage emotions.	Build self-awareness and regulation with emotions, particularly in building positive ones.
Mindfulness	Meditation practice.	Increased positive affect, immune function, self-awareness.
Best self	Write down a time of being your best self and reflect on the personal strengths leveraged in that situation.	Improved affect, relational connections, and personal agency.
Critical thinking	Practice questioning, synthesizing and evaluating information.	Influence beliefs and actions.
Active constructive responding	Responding to the good news of others with support.	Increased quality of relationships.

Source: Adler & Seligman, 2018

Conclusion

Well-being is related to and predictive of a whole host of positive outcomes. In education, well-being is tied to important factors such as broadened scope of attention, creativity, personal resources, academic retention, positive relationships, and academic achievement. In the workforce, well-being is shown to enhance success in the interview process, job performance, career satisfaction, and income levels. In terms of physical health, well-being has well-documented ties to improving outcomes in indicators such as morbidity, heart disease, longevity, and risky behaviors.

Despite well-being's demonstrable downstream effects, it is not yet overtly taken into account in popular rankings of U.S. colleges. Currently, these publications tend to focus on factors related to prestige and financial indicators, among others. Research has demonstrated that these rankings impact not only the choices made by applicants, but that they also affect the strategic and financial decision made by colleges themselves. Given well-being's utility, the current state of college rankings, and the demonstrated impact of these publications, an opportunity exists to supplement the field with a well-being ranking of U.S. colleges.

A menu of measurement options exists from which to build a ranking of well-being. Traditionally, the popular metrics for well-being have come from self-report questionnaires. More recently, big data analyses have proven effective at measuring well-being across large communities. Further, behavioral measures have also found recent success with technology-based data collection. I propose a methodology that encompasses this variety in approaches and that is rooted in the PERMA framework of well-being. It is my hope that this methodology will be honed over time through trial and experience, and that such a ranking would enable students to choose a life of flourishing and encourage schools to better support the well-being of their communities. As discussed in the final section of this discussion, a plethora of evidence-based interventions for improving well-being already exists. Now, they just need to be put in the hands of students.

What we measure matters: we pay attention to what we measure, we can evaluate the impact of what we measure, and we can improve what we measure. Well-being is worth paying attention to, evaluating, and improve.

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