MARRIAGE IS GOOD FOR YOUR HEALTH

BY SUSAN MARTINUK
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FAMILY

SUSAN MARTINUK

Susan Martinuk is a Vancouver-based research consultant, and former researcher in reproductive technologies and infertility. In 1990, she and her colleagues achieved a world-first medical breakthrough – the first to visualize and record the process of human ovulation. From 2010 to 2012, Susan carried out the first-ever study on access to, and utilization of, PET (positron emission tomography) imaging in cancer care in Canada. The 200-page report (http://www.triumf.ca/pet-report) presents utilization statistics, identifies factors restricting the use of PET in Canada, and suggests that this technology could provide more clinically- and cost-effective care for cancer patients.

She is a former radio-talk show host and, for the past 20 years, has been a nationally-known editorial columnist and published more than 1500 articles in major newspapers, magazines and journals across Canada. In 2012, Susan was awarded the Queen's Diamond Jubilee Medal for her contributions to Canadian society through her writing.

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HAMILTON OFFICE

185 Young St.

Main Floor

Hamilton, ON

L8N 1V9

(888)339-8866 Canada Only

(905)528-8866 Worldwide

(905)528-9433 Fax

info@cardus.ca

www.cardus.ca

OTTAWA OFFICE

45 Rideau St.

7th Floor

Ottawa, ON

K1N 5W8

(613)241-4500

EXECUTIVE SUMMARY

As governments and individuals struggle to make informed and well-considered public policy decisions on the issue of healthcare it is becoming increasingly important that they take into account the state of Canadian marriages. *Marriage is Good for your Health* examines more than 50 published, empirical studies on the correlation between marital status and health. An overwhelmingly large majority of the studies indicates that married couples are happier, healthier, and live longer than those who are not married. Moreover, there is strong research to back the conclusion that the quality of a marriage is a critical variable in the health benefits that couples enjoy.

HEALTH ADVANTAGE HIGHLIGHTS

Numerous studies indicate that married people tend to have:

- Higher likelihood of recovering from cancer
- Lower risk of suffering a heart attack
- Better odds of surviving a heart attack
- Quicker recovery from illness
- Healthier habits and lifestyles
- Better responses to psychological stress

THE MARRIAGE QUALITY FACTOR

Having a marriage where partners experience high satisfaction with their relationship, predominantly positive attitudes and low hostility towards their mate is vital for couples' good health advantages. By contrast, a considerable body of research indicates a low-quality marriage has several harmful effects on couples' health:

- Increased blood pressure
- Increased risk of heart disease
- Increased depression
- Increased time needed for healing of physical wounds
- Increased levels of stress hormones
- Decreased immune function

PUBLIC POLICY IMPLICATIONS

Marriage is a private choice, but it has public consequences for the Canadian healthcare system. Canadians' declining participation in marriage isn't merely a statistical trend. Given that marriage has been found to be a factor in better cancer recovery and fewer cardiac problems, should it not be considered a public health issue? Could public policy that supports and improves the quality of Canadian marriages not lead to lower costs for the public health system?

Governments, religious institutions, the medical profession, and communities all need to be aware that marriage is an important factor in individuals' health outcomes. If these groups understand the relationship between marital status and illness, healthcare can be improved both for those who are married and those who are not.

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I. INTRODUCTION

An extensive body of peer-reviewed, empirical evidence demonstrates that married adults are happier, healthier (both mentally and physically), and live longer than those who are not married, whether they be single, separated, divorced, or widowed.[1] Further, this body of evidence reveals that married couples have better health outcomes from a host of minor ailments,[2] as well as critical conditions such as cancer and cardiovascular disease.[3]

There is also agreement within a majority of the research that married people earn more money, accumulate more wealth, have better access to health care, feel more fulfillment in their lives, enjoy more satisfying sexual relationships, and have happier, more successful children.[4]

Collectively, these benefits have been termed "the marriage advantage." Although the origin of this term is uncertain, it has commonly appeared in the academic literature for several decades as a descriptor of the unique health and economic benefits of the marriage union.

The purpose of this report is to provide a review of the health benefits that are currently associated with the marriage advantage and the various physiological mechanisms that are most likely utilized to influence the health of married couples.[5]

There are two broad, competing, yet not mutually exclusive theories that are typically used to explain the positive relationship that exists between health and marriage.[6] *The marriage*

1 Walter R. Gove "Sex, Marital Status and Mortality," *American Journal of Sociology* 79 (1973): 45–67. Linda J. Waite and Maggie Gallagher, *The Case for Marriage: Why Married People Are Happier, Healthier, and Better Off Financially* (New York: Doubleday, 2000). Theodore F. Robles and Janice K. Kiecolt-Glaser, "The Physiology of Marriage: Pathways to Health," *Physiology and Behavior* 79 (2003): 409–16. David J. Roelfs et al. "The Rising Relative Risk of Mortality for Singles: Meta-analysis and Meta-regression," *American Journal of Epidemiology* 174, no. 4 (2011): 379–89. Michael S. Rendall et al., "The Protective Effect of Marriage for Survival: A Review and Update," *Demography* 48 (2011): 481–506. Nezih Guner et al. "Does Marriage Make You Healthier?" (IZA Discussion Paper no. 8633, Institute for the Study of Labour, Bonn, Germany, 2014).

2 Charlotte A. Schoenborn, "Marital Status and Health: United States, 1999–2002," *Advance Data from Vital and Health Statistics 351 (2004): https://www.cdc.gov/nchs/data/ad/ad351.pdf.*

3 Ayal A. Aizer et al. "Marital Status and Survival in Patients with Cancer," *Journal of Clinical Oncology* 49 (2013): 3869–76. Carlos L. Alviar et al., "Association of Marital Status with Vascular Disease in Different Arterial Territories: A Population-Based Study of Over 3.5 Million Subjects" (poster presentation no. 153 at the American College of Cardiology 63rd Annual Scientific Sessions, March 29, 2014, Washington, DC).

4 Waite and Gallagher, *Case for Marriage*. Linda J. Waite and Evelyn L. Lehrer, "The Benefits from Marriage and Religion in the United States: A Comparative Analysis," *Population and Development Review* 29 (2003): 255–76. Anne-Marie Ambert, "Cohabitation and Marriage: How Are They Related? Contemporary Family Trends" (Vanier Institute of the Family, Ottawa, ON, 2005).

5 An examination of the literature associated with the economic or financial benefits of marriage is beyond the scope of this review.

6 Rendall et al., "Protective Effect." Susan L. Averett et al., "In Sickness and in Health: An Examination of Relationship Status and Health Using Data from the Canadian National Public Health Survey," *Review of Economics of the Household* 11 (2012): 599–633.

selection hypothesis suggests that healthy and happy people are more likely to be selected into marriage because they make better marriage partners. Therefore, marriage itself does not improve health; rather, married couples have better health because healthier people are more likely to get married. By extending this hypothesis, some sociological researchers believe that even if unhappy/unhealthy people get married, they are more likely to divorce and more prone to widowhood.

In contrast, *the marriage protection hypothesis* suggests that marriage confers health benefits by encouraging healthy behaviours, discouraging unhealthy/risky behaviours, and providing emotional support during adversity. That is, marriage itself promotes, and results in, better health.

Whether it is the result of selection or protection, there appears to be a consensus in the research that the marriage advantage exists and that it conveys significant health benefits to married couples. However, it should be noted that researchers have isolated one critical variable that overrides this correlation: the quality of the marriage.

It is estimated that social, environmental and behavioural factors account for as much as 60% of one's health, with genetics and biological factors accounting for about 20% each.

Just as a good marriage is associated with life-extending health benefits, a bad, unhealthy, or high-conflict marriage can have a profoundly negative impact on the health of the couple.[7] This suggests that it is the quality of the relationship (and not just the act of getting married) that has the greatest effect on human health. As a result, much of the medical, sociological, and psychological research on the marriage advantage has now moved beyond health comparisons based on marital status to health comparisons based on variations in marital quality.

Determining social factors that influence individual health is an increasingly significant aspect of health care, as studies "uniformly suggest that nonmedical factors play a substantially larger role than do medical factors in health."[8] In fact, it is estimated that social, environmental, and behavioural factors account for as much as 60 percent of one's health, with genetics and biological factors accounting for about 20 percent each.[9]

Marriage is clearly an important determiner of individual health. By logical extension and, according to the results of numerous studies, the health of married couples has an impact on the health and well-being of children, entire families, and ultimately Canadian society.[10] Married couples currently constitute 46 percent of our national population (over fifteen years of age),[11] and the creation of appropriate policies, programs, and resources to educate couples

7 Jana Staton, "What Is the Relationship of Marriage to Physical Health?" (fact sheet, National Healthy Marriage Resource Center, Oklahoma City, OK, 2008). Mary E. Hughes and Linda J. Waite, "Marital Biography and Health at Mid-life," *Journal of Health and Social Behavior* 50, no. 3 (2008): 344–58. Hui Liu and Linda Waite, "Bad Marriage, Broken Heart? Age and Gender Differences in the Link Between Marital Quality and Cardiovascular Risks Among Older Adults," *Journal of Health and Sociological Behavior* 55, no. 4 (2014): 403–23. Theodore Robles et al., "Marital Quality and Health: A Meta-analytic Review," *Psychological Bulletin* 140, no. 1 (2014): 140–87. Kathleen B. King and Harry T. Reis, "Marriage and Long-Term Survival After Coronary Artery Bypass Grafting," *Health Psychology* 31, no. 1 (2012): 55–62.

8 Lauren A. Taylor et al. "Leveraging the Social Determinants of Health: What Works?" (Yale Global Health Research Institute, June 2015).

9 Ibid.

10 Waite and Gallagher, *Case for Marriage*; Waite and Lehrer, "Benefits from Marriage"; Ambert, "Cohabitation and Marriage."

11 Anne Milan, "Marital Status: Overview, 2011," Statistics Canada, last modified November 30, 2015, http://www.statcan.gc.ca/pub/91-209-x/2013001/article/11788-eng.htm.

THE EVIDENCE FROM FOUR DECADES OF RESEARCH IS SURPRISINGLY CLEAR: A GOOD MARRIAGE IS BOTH MEN'S AND WOMEN'S BEST BET FOR LIVING A LONG, HEALTHY LIFE.

—DR. LINDA WAITE, SOCIOLOGIST

about the marriage advantage and strengthen spousal relations may promote greater health and a diminished use of health-care resources by some couples and their families.

Understanding the mechanisms by which marriage promotes better health can also be beneficial in assisting health-care personnel identify the advantageous components of marriage that appear to be missing in the health-care regimes of those who are widowed, separated, divorced, or have never married.

Implementing medical protocols that address and provide alternatives to these missing elements could result in markedly improved health outcomes for this subset (54 percent) of Canada's population.[12] Without such changes, the evidence reported herein suggests that those in the various unmarried groups will remain at a higher risk for morbidity and mortality, and they will continue to be at a distinct disadvantage in terms of the health care they receive.

12 Ibid.

II. METHODOLOGY

This report is a partial review of empirical studies that relate to some aspect of the marriage advantage. Studies were selected that compared marital status (married, unmarried, divorced, separated, widowed, and, in some cases, cohabitation) to various health outcomes (including depression, happiness, lifestyle, and survival from critical illnesses such as cancer, heart disease, and cardiac surgeries). There was an emphasis on locating publications that

1. described various sociological, psychological, and physiological pathways by which the intangible bonds of marriage become a biological buffer that is capable of promoting and protecting an individual's health;
2. examined the significance of marital quality to health;
3. described various aspects of this research that have yet to be adequately resolved;
4. were authoritative literature reviews or presented a large-scale, meta-analysis of other published studies;
5. covered the work of specific researchers; and
6. were conducted by Canadian researchers or utilized Canadian data.

More than fifty published studies were reviewed for this report. When selecting the studies to be highlighted, primary consideration was given to the influence of the study (how often it is cited), its significance to public knowledge, and the size of the database in the study. A large pool of data provides the most accurate reflection of a population, and any conclusions that stem from its analysis are considered to be the most reliable.

Information was also compiled from five research reports for think tanks, one book, and two conference presentations. Canadian statistics on marriage, cancer, and heart disease/stroke are from Statistics Canada, the Canadian Cancer Society, and the Heart and Stroke Foundation of Canada.

It should be noted that the studies presented herein represent correlations (not causations) between marital status and health. A correlation is an established link, but the presence of a link is not proof that one action has caused the other. As such, marriage or marital status does not cause a disease or cause an individual to be immune to a certain disease. As research continues to grow in nuance and complexity, it becomes increasingly doubtful that one "causal" pathway will be elucidated. It is far more likely that a number of mediating pathways are involved.

Finally, it should be noted that statistics represent trends in populations and therefore apply to populations, not to individuals. For example, a study may report that unmarried men have a 30 percent increased risk of mortality. That percentage applies to the survey population, not the individual. Each unmarried man still has the option of making choices that reduce his mortality risk, such as eating well, getting lots of exercise, and not participating in harmful behaviours like excessive drinking and smoking.

III. EVIDENCE FOR THE MARRIAGE ADVANTAGE

For over 150 years, researchers have explored the impact of marriage on humankind's mortality and morbidity. An extensive array of empirical research on the subject now exists, and it typically demonstrates a positive, consistent association between marriage and three key areas related to human health: mental health, physical health, and longevity. As a result, there appears to be a general agreement within the literature that these associations (i.e., the marriage advantage) exist.[13]

In addition, a growing body of literature now reports on the influence of marriage on recovery from serious illnesses, such as cancer and heart disease.[14] The information that follows covers some of the most significant research that has evaluated the marriage advantage in terms of mental health, physical health, and mortality.

A. PHYSICAL HEALTH

The evidence from four decades of research is surprisingly clear: A good marriage is both men's and women's best bet for living a long, healthy life.

— Linda Waite, professor of sociology, University of Chicago, and Maggie Gallagher, president, Institute for Marriage and Public Policy, 2003[15]

Some of the most widely agreed-on research has demonstrated that marriage is associated with optimal physical health and has a positive, even protective, effect that is evident in general health situations and in terms of specific diseases.[16]

Overall, research has shown the following about married people:

- They have healthier lifestyles.[17] They tend to eat healthier meals, get more sleep, and have better exercise habits.
- They have healthier habits.[18] They are less likely to drink, smoke, engage in risky lifestyle behaviours, or eat unhealthy meals.[19]
- They produce fewer stress hormones in response to psychological stress.[20]

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13 Guner et al., "Does Marriage Make You Healthier?"; Hughes and Waite, "Marital Biography"; Deborah Carr and Kristen W. Springer, "Advances in Families and Health Research in the 21st Century," *Journal of Marriage and Family* 72 (2010): 743–61.

14 Aizer et al., "Marital Status"; Alviar et al., "Association of Marital Status."

15 Waite and Gallagher, *Case for Marriage*.

16 Hughes and Waite, "Marital Biography"; Carr and Springer, "Advances."

17 Alviar et al., "Association of Marital Status"; Aino Lammintausta et al., "Prognosis of Acute Coronary Events Is Worse in Patients Living Alone: The FINAMI Myocardial Infarction Register," *European Journal of Preventive Cardiology* 21, no. 8 (2013): 989–96.

18 Guner et al., "Does Marriage Make You Healthier?"

19 Schoenborn, "Marital Status and Health"; Roelfs et al., "Rising Relative Risk."

20 Dario Maestripieri et al., "Between- and Within-Sex Variations in Hormonal Responses to Psychological Stress in a Large Sample of College Students," *Stress* 13, no. 5 (2010): 413–24. University of Chicago Press Release, "Marriage and Committed Relationships Reduce Production of Stress Hormones," August 18, 2010, https://news.uchicago.edu/article/2010/08/18/marriage-and-committed-relationships-reduce-production-stress-hormones.

- They are more likely to recover from cancer.[21]
- They are at a lower risk of having a heart attack[22] and at a lower risk of dying after having a heart attack.[23] In contrast, the odds of dying from a heart attack are increased for both unmarried men and women, regardless of their age.[24]
- They have better outcomes from heart surgery,[25] with one study showing that marriage triples an individual's likelihood of having a successful outcome from cardiac surgery.[26]
- They recover more quickly from minor and major illnesses.[27]
- They have better health as the marriage continues and they get older.[28] Seventy-six percent of elderly married people reported being in good or excellent health, compared to just 28 percent of their peers who were widowed, divorced, living with a partner, or never married. In contrast, three times as many widowed adults over the age of sixty-five reported limitations in their activities of daily living compared to their married peers.[29]

Moreover, singles tend to participate in riskier social behaviours than married adults. Unmarried men, in particular, have a greater tendency to indulge in negative behaviours such as excessive drinking, reckless driving, smoking, unsafe sexual practices, and poor nutrition habits.[30]

A 2004 study by the United States Department of Health and Human Services National Center for Health Statistics conducted computer-assisted interviews with 127,545 American adults. It found that married adults were the least likely to experience health problems and/or engage in risky health behaviours such as cigarette smoking or heavy drinking. Further, regardless of age, sex, race, education, income, or health indicator (e.g., fair or poor health, low back pain, migraines, or limitations in activities), "married adults were generally found to be healthier than adults in other marital status categories."[31]

Charlotte Schoenborn's analysis included cohabiting adults; she reported that cohabiters had higher rates of negative health indicators than married adults (i.e., more likely to be in fair or poor health and to have some kind of limitation of activities; more likely to have experienced low back pain, headaches, and serious psychological distress; also less physically active, and more likely to smoke cigarettes and be heavier drinkers). The health patterns of cohabiters

21 Aizer et al., "Marital Status"; David W. Kissane, "Marriage Is as Protective as Chemotherapy," editorial in *Journal of Clinical Oncology* 51 (2013): 5080. Hakon Kravdal and Astri Syse, "Changes Over Time in the Effect of Marital Status on Cancer Survival," *BMC Public Health*, October 15, 2011, http://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-11-804.

22 Alviar et al., "Association of Marital Status." Lammintausta et al., "Prognosis."

23 Lammintausta et al., "Prognosis."

24 Ibid.

25 Mark D. Neuman and Rachel M. Werner, "Marital Status and Post-operative Functional Recovery," *JAMA Surgery* 151 (2016): 197–96; King and Reis, "Marriage and Long-Term Survival."

26 Ellen L. Idler et al., "Mending Broken Hearts: Marriage and Mortality following Cardiac Surgery," *Journal of Health and Social Behavior* 53, no. 1 (2012): 33–49.

27 Schoenborn, "Marital Status and Health."

28 Hughes and Waite, "Marital Biography"; Guner et al., "Does Marriage Make You Healthier?"

29 Schoenborn, "Marital Status and Health."

30 Ibid.; Gove, "Sex, Marital Status and Mortality"; Inez Joung et al., "The Contribution of Specific Causes of Death to Mortality Differences by Marital Status in the Netherlands," European Journal *of Public Health* 6(2) (1996):142-149.

31 Joung et al., "The Contribution of Specific Causes of Death to Mortality Differences by Marital Status in the Netherlands."

were more consistent with those of divorced and separated adults than married adults.

Nezih Guner and his colleagues used American data to evaluate the relationship between marriage and health for individuals of working age.[32] For individuals aged twenty to twenty-nine, they reported that the health gap between married and unmarried groups was about three percentage points on a scale of self-reported health. That health gap was observed to widen with age and show a cumulative effect; for those aged fifty-five to fifty-nine, the gap between married and unmarried groups has expanded to twelve percentage points.

Focusing solely on the numbers can obscure the impact of the one element of marriage that cannot be measured – love. All human beings have a deep, innate need for love and a connection to other human beings. For many adults, that need is filled by marriage.

In 2009, Mary Hughes and Linda Waite used longitudinal data to study marital "biography" (life history) and health.[33] They showed that the short-term effects of marital status and marital transitions have a long-term impact. At midlife, married persons who have never been divorced or widowed have better health (measured by number of chronic conditions, mobility limitations, self-rated health, and depressive symptoms) than married persons who have undergone a marital disruption through divorce or death. Marital disruptions damaged the health of individuals over the long term; if these individuals remarried, they regained some measure of health, but did not regain the same level of health shown by the continuously married.

In addition, they reported "strong and consistent" effects of marriage on later health, demonstrating that health benefits tend to accumulate over a lifetime of marriage.[34]

Since marriage is typically associated with positive, health-improving lifestyle behaviours, it is interesting to note that the only health problem that appears to be associated with marriage (and men in particular) is overeating and, in turn, the potential for weight gain and obesity.[35]

According to Schoenborn, 75.2 percent of middle-aged, married American men were overweight or obese, the highest percentage of any marital status group studied. This was attributed to having meals and food readily available, and to the possibility that married persons may tend to "let themselves go" or be less conscious of their body image once they are married or have been married for a long time.[36]

Similarly, a study by American researchers who utilized data from the Canadian National Public Health Survey found that marriage and cohabitation were associated with weight gain for both men and women, as measured by increases in body mass index (BMI).[37] It was determined that married/cohabiting women were overweight by 5.5 percent, and married/cohabiting men were 6 percent less likely to engage in exercise during marriage, compared to when they were single.

32 Guner et al., "Does Marriage Make You Healthier?"
33 Hughes and Waite, "Marital Biography."
34 Ibid.
35 Schoenborn, "Marital Status and Health"; Averett et al., "In Sickness and in Health."
36 Schoenborn, "Marital Status and Health."
37 Averett et al., "In Sickness and in Health."

Although the positive impact of marriage on physical health is generally accepted, there are few reports of contrary data. Overall, Susan Averett and her colleagues demonstrated mixed results in their study of relationship status and health.[38] While marriage (and cohabitation, although to a lesser extent) improved the mental and physical health of women (compared to never married women), married men were more likely to report a chronic health condition. This study also reported that there was no difference in the mental health of women who divorced, a finding that is contrary to the literature.[39]

James White reported somewhat similar results.[40] Although he found an enhanced sense of well-being among married and cohabiting adults, he observed that single women appeared to be in better physical health as they scored higher in subjective health reports, and reported fewer health problems, and fewer visits to a physician than married women. In contrast, there were no differences reported among men in the various marital status groups. Zheng Wu and Randy Hart reported an inverse relationship whereby the longer individuals remained in a marriage or cohabiting union, the more their physical health deteriorated.[41]

1. CANCER

Strikingly, the benefits of marriage are comparable to, or greater than, anticancer treatment with chemotherapy.

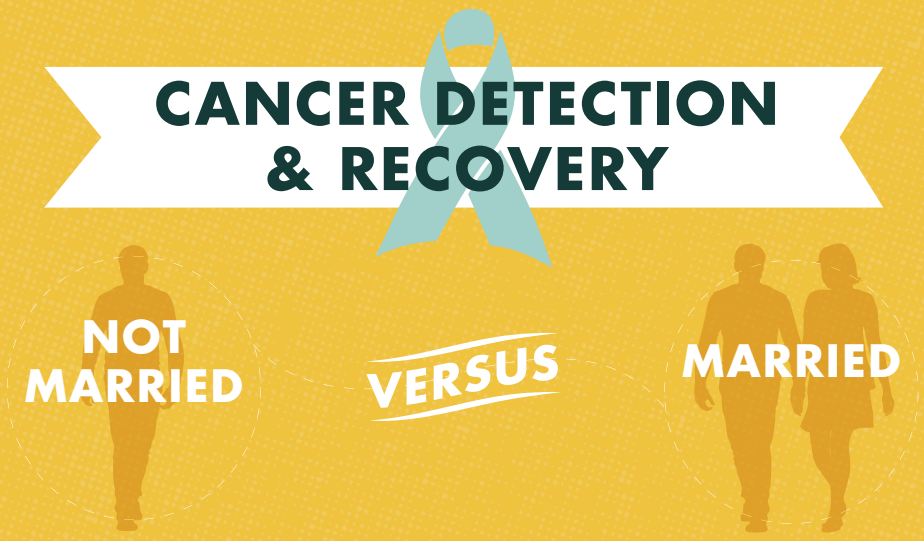
— David Kissane, psychiatrist, Memorial Sloan-Kettering Cancer Center, Weill Cornell Medical College, Monash University, Victoria, Australia,[42]

There is a growing body of academic research that is evaluating the influence of marital status on cancer survival. Early studies provided conflicting results;[43] however, researchers now have the technology and the tools to analyze large populations of data, evaluate multiple cancers at the same time, and follow patients over long periods of time. As a result, more recent studies have clearly demonstrated that marriage offers a significant advantage to individuals fighting cancer.[44] In fact, the marriage advantage is considered by some to be so potent in overcoming cancer that a 2013 editorial in the *Journal of Clinical Oncology* was not-so-subtly titled, "Marriage Is as Protective as Chemotherapy in Cancer Care."[45]

For five specific cancers (prostate, breast, colorectal, esophageal and head/neck cancer), the survival benefit associated with marriage was larger than the published survival benefit of chemotherapy.

The author was David Kissane, a leading psychiatrist in the field of psycho-oncology who, for years, was the attending psychiatrist at the world-leading Memorial Sloan-Kettering Cancer Center. Kissane was referring to the conclusions of a just-published, large-scale American

38 Ibid.
39 Hughes and Waite, "Marital Biography."
40 James M. White, "Marital Status and Well-Being in Canada: An Analysis of Age Group Variations," *Journal of Family Issues* 13 (1992): 390–409.
41 Zheng Wu and Randy Hart, "The Effects of Marital and Non-marital Union Transition on Health," *Journal of Marriage and Family* 64 (2002): 420–32.
42 Kissane, "Chemotherapy."
43 Aizer et al., "Marital Status."
44 Ibid.; Kravdal and Syse, "Changes Over Time."
45 Kissane, "Chemotherapy."



A 2013 STUDY EXAMINING SURVIVAL OUTCOMES FOR THE 10 MOST COMMON CANCERS FOUND THAT MARRIED CANCER PATIENTS LIVED 20 PERCENT LONGER THAN THOSE WHO WERE SINGLE, DIVORCED OR WIDOWED.

study which found the marriage effect to be so strong that, for five specific cancers (prostate, breast, colorectal, esophageal, and head/neck cancer), "the survival benefit associated with marriage was larger than the published survival benefit of chemotherapy."[46]

This study analyzed data from 735,000 patients to compare marital status and survival outcomes for the ten most deadly cancers in the United States. Overall, Ayal Aizer and colleagues found that married cancer patients lived 20 percent longer than those who were single, divorced, or widowed, and that the marriage benefit in overcoming cancer was greater for men than for women. Aizer, the lead author, was quoted as saying, "We suspect that social support from spouses is what's driving the striking improvement in survival."[47]

Even when the resultant data was adjusted for lifestyle factors that could affect cancer occurrence and survival (such as age, sex, and race), the mortality outcomes of married patients were still significantly lower (by 12 to 33 percent, depending on the type of cancer) than those for unmarried people. Marriage had the highest impact on head/neck cancers (reducing the risk of death by 33 percent). The lowest impact was seen in liver (12 percent) and pancreatic (13 percent) cancers, but even these percentages represented a statistically significant benefit for married patients.

Researchers attributed this enhanced survival to "a clear and consistent protective effect of marriage" and, more specifically, to "the potentially significant impact that social support can have on cancer detection, treatment and survival."[48]

In his editorial in the *Journal of Clinical Oncology*, Kissane referred to the benefit as demonstrating "the power of human attachment" to enhance survival from cancer.[49]

46 Aizer et al., "Marital Status."
47 Alice G. Walton, "Why Does Marriage Benefit Health, Cancer Survival?," *Forbes.com*, September 24, 2013, http://onforb.es/1gWoOhT.
48 Ibid.
49 Kissane, "Chemotherapy."

Hakon Kravdal and Astri Syse evaluated changes in cancer mortality over a forty-year period (1970–2007), using the data of 444,000 people from Norway's cancer registry. They compared marital status with patient outcomes in the thirteen most common cancers in Norwegian men and women, and found that marriage had a significant impact on cancer survival. The unmarried were at a greater risk of mortality regardless of age, education, site of the tumour, time since diagnosis, and cancer stage.[50]

When analyzed over time, the longitudinal database also revealed that the cancer mortality risks may be increasing for those who are not married. Analysis of the earliest data (1970–1974) showed that unmarried men and women were, respectively, 18 percent and 17 percent more likely to die from their cancer. However, the most recent data (2005–2007) showed this same risk was elevated to 35 percent and 22 percent, respectively, suggesting that cancer mortality risks are on the rise for unmarried persons and, in particular, unmarried men.

Studies that evaluated marital status and mortality in large populations with multiple cancers, such as those above, offer the most consistent and reliable evidence for the marriage advantage. However, some studies on individual cancers also may provide relevant insights because of their large population size or because they were carried out over a long period of time.

Unmarried cancer patients are at a significantly higher risk of dying once they are diagnosed with cancer.

Colon cancer: The records of 127,750 Americans diagnosed with colon cancer (between 1992 and 2006) also produced evidence of the protective effect of marriage.[51] Similar to the findings of Aizer and colleagues,[52] this report showed that married persons (both men and women) had significantly better survival outcomes, were more likely to be diagnosed at an earlier stage of disease, and were more likely to receive surgical treatment than the various groups of unmarried patients.

Prostate cancer: A University of Miami study followed men with prostate cancer over a seventeen-year period (1973–1990) and showed that married men lived significantly longer (sixty-nine months) than unmarried (forty-nine months) or separated/divorced men (thirty-eight months) from the time of diagnosis.[53] Married men also had a significantly lower risk of mortality when compared to those who were divorced, single, separated, or widowed.

Locally advanced lung cancer: A ten-year study from the University of Maryland found that 33 percent of married lung cancer patients were still alive after three years, compared to just 10 percent of single men and women.[54] Overall, married women had the best survival rate (46 percent) for lung cancer, followed by married men and single women (tied at 25 percent). Single men had by far the lowest survival rates; just 3 percent were alive at the three-year mark.

In a press release from the University of Maryland Medical Center, Elizabeth Nichols, the

50 Kravdal and Syse, "Changes Over Time."

51 Li Wang et al. "Marital Status and Colon Cancer Outcomes in US Surveillance, Epidemiology and End Results Registries: Does Marriage Affect Cancer Survival by Gender and Stage?," *International Journal of Cancer Epidemiology, Detection and Prevention* 35, no. 5 (2011): 417.

52 Aizer et al., "Marital Status."

53 Arnon Krongrad et al., "Marriage and Mortality in Prostate Cancer," *Journal of Urology* 156, no. 5 (1996): 1696–1700.

54 Elizabeth M. Nichols et al., "Marital Status Is An Independent Predictor Of Survival For Patients Undergoing Definitive Chemoradiation For Stage Iii Non-small Cell Lung Cancer" (paper presented at the 2012 Chicago Multidisciplinary Symposium in Thoracic Oncology), *Journal of Thoracic Oncology* 7, no. 9, suppl. 4 (2012): S203–340.

study's lead author, stated that marital status "appears to be an important independent predictor of survival."[55]

In conclusion, the above data is obviously good news for married couples. However, it also provides evidence that unmarried cancer patients are at a significantly higher risk of dying once they are diagnosed with cancer. According to the findings presented above, unmarried adults are also at a higher risk of presenting with metastatic disease and being undertreated once diagnosed.[56]

2. CARDIOVASCULAR DISEASE

Marriage reduces the risk of acute coronary events and death due to acute coronary events in both men and women at all ages.

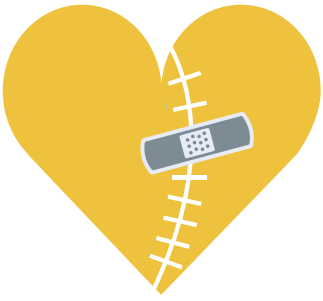
— Aino Lammintausta, Turku University Hospital, Turku, Finland, 2013[57]

An impressive body of research has also demonstrated that marriage can make a significant difference in outcomes related to heart health and cardiovascular disease: Marriage reduces the risk of heart attacks for men and women,[58] better enables them to survive after a heart attack[59] and results in better outcomes following cardiac surgery.[60]

55 University of Maryland Medical Center Press Release, "Married Lung Cancer Patients Survive Longer Than Single Patients After Treatment," September 6, 2012, https://www.sciencedaily.com/releases/2012/09/120906092803.htm.
56 Aizer et al., "Marital Status"; Kravdal and Syse, "Changes Over Time"; Wang et al., "Marital Status."
57 WebMD News Archive, "Get Married, Cut Heart Attack Risk?," January 31, 2013, http://www.webmd.com/sex-relationships/news/20130131/marriage-may-cut-heart-attack-risk-for-both-spouses.
58 Alviar et al., "Association of Marital Status"; Lammintausta et al., "Prognosis."
59 Ibid.
60 Neuman and Werner, "Marital Status"; King and Reis, "Marriage and Long-Term Survival"; Idler et al., "Mending Bro-

CARDIOVASCULAR DISEASE

THE ODDS OF DYING FROM A HEART ATTACK ARE INCREASED FOR UNMARRIED MEN AND WOMEN, REGARDLESS OF AGE.



MARRIAGE TRIPLES AN INDIVIDUAL'S LIKELIHOOD OF SUCCESSFUL CARDIAC SURGERY.

The largest study ever done on marriage and heart health evaluated the records of 3.5 million Americans.[61] It reported that married people were significantly less likely than single, divorced, or widowed people to have heart or vascular disease, and this held true regardless of age, sex, or cardiovascular risk factors. It also revealed that this effect is strongest in young people and diminishes as they age. For example, married couples under the age of fifty were 12 percent less likely to have cardiac disease than singles of the same age. But the mortality advantage drops to 7 percent (from ages fifty-one to sixty) and then 4 percent (for those over sixty years of age) as married couples grew older. Overall, marriage resulted in a 5 percent reduction in the risk of having any kind of cardiovascular disease.

Jeffrey Berger, a cardiologist and one of the senior researchers for this study, concluded that "marital status does indeed matter"[62] in relation to cardiovascular disease, and this conclusion is considered to be exceptionally strong, as the results stem from a very large database. Consequently, the data is more likely to be representative of typical populations, and the resulting interpretations are considered to be more reliable than those of a smaller study. Berger also states, "Marriage offers an emotional and physical support system during times of illness and general health. Married people can look after each other, making sure their spouse eats healthy, exercises regularly and takes medication as prescribed. A spouse can also help keep doctors' appointments and provide transportation, making for easier access to health care services."[63]

Other studies have demonstrated similar results when evaluating the protective effect of marriage on cardiovascular disease:

- A Japanese study concluded that men who never marry are three times more likely to die of cardiovascular disease than married men.[64]
- The Framingham Offspring study, the longest-running, ongoing study of cardiovascular health in the United States, showed that married men had a 46 percent lower risk of death than unmarried men, and this held true even when cardiovascular risk factors such as age, body fat, smoking, blood pressure, diabetes, and cholesterol were taken into account.[65]
- Finnish researchers evaluated data from 15,330 people and found that marriage not only reduced the risk of heart attacks for both men and women but also better enabled them to survive a heart attack.[66] They found that unmarried men were 56 to 66 percent more likely to have a heart attack (compared to their married counterparts) and 60 to 168 percent more likely to die within twenty-eight days of having a heart attack. Similarly, the data for unmarried women revealed that they were 60 to 65 percent more likely to have a heart attack and 71 to 175 percent more likely to die within twenty-eight days of a heart attack when compared to married women.

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ken Hearts."

61 Alviar et al., "Association of Marital Status."

62 New York University Langone Medical Center/New York University School of Medicine Press Release, "Married People Less Likely to Have Cardiovascular Problems," March 28, 2014, http://www.eurekalert.org/pub_releases/2014-03/nlmc-mpl032714.php (see Alviar et al., "Association of Marital Status").

63 New York University Langone Medical Center/New York University School of Medicine, "Married People."

64 Ai Ikeda et al., "Marital Status and Mortality Among Japanese Men and Women: The Japan Collaborative Cohort Study," *BMC Public Health*, May 7, 2007, www.biomedcentral.com/1471-2458/7/73.

65 Elaine D. Eaker et al. "Marital Status, Marital Strain, and the Risk of Coronary Heart Disease or Total Mortality: The Framingham Offspring Study," *Psychosomatic Medicine* 69 (2007): 509–13.

66 Lammintausta et al., "Prognosis."

MARRIAGE REDUCES THE RISK OF HEART ATTACKS FOR MEN AND WOMEN, BETTER ENABLES THEM TO SURVIVE AFTER A HEART ATTACK AND RESULTS IN BETTER OUTCOMES FOLLOWING CARDIAC SURGERY.

Other researchers have evaluated marital status with regard to surgical outcomes for cardiovascular disease. Sociologist Ellen Idler of Emory University in Atlanta was the lead author on a study that showed marriage was associated with significantly more "successful post-operative outcomes" and made a "dramatic difference in survival rates . . . during the most critical post-operative recovery period."[67]

More specifically, Idler's study showed the following:[68]

- Married adults (men or women) who underwent heart surgery were more likely to survive the surgery.
- The overall mortality risk for unmarried patients undergoing heart surgery was almost twice that of married patients.
- Married patients were more than three times more likely (than unmarried) to survive the post-operative period (three months post-surgery).
- Unmarried patients who survived the first three months were still 70 percent more likely to die (than married people) in the next five years.

Kathleen King and Harry Reis also found that married men and women who had coronary bypass surgery (considered a high-risk procedure) were almost three times more likely to be alive fifteen years later when compared to unmarried counterparts.[69]

Most recently, *JAMA Surgery* published a study which concluded that marital status was a valid predictor of "survival and functional recovery after cardiac surgery."[70] Mark Neuman and Rachel Werner followed the outcomes of 1,500 adults who underwent cardiac surgery. Two years later, unmarried adults (widowed, divorced, or separated) were 40 percent more likely than married adults to have died or developed a new functional disability (defined as losing the ability to perform an activity required for independent daily living) following the surgery.

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67 Carol Clark, "Marriage: A Powerful Heart Drug in Short Supply," *eScienceCommons* (blog), February 29, 2012, http://esciencecommons.blogspot.com/2012/02/marriage-powerful-heart-drug-in-short.html (see Idler et al., "Mending Broken Hearts").

68 Idler et al., "Mending Broken Hearts."

69 Kathleen King and Harry T. Reis, "Marriage and Long-Term Survival After Coronary Artery Bypass Grafting," *Health Psychology* 31 (2012): 55–62.

70 Neuman and Werner, "Marital Status."

THE UNMARRIED OF BOTH SEXES HAVE HIGHER DEATH RATES, WHETHER BY ACCIDENT, DISEASE OR SELF-INFLICTED WOUNDS, AND THIS IS FOUND IN EVERY COUNTRY THAT MAINTAINS ACCURATE HEALTH STATISTICS.
— ROBERT COOMBS, UCLA PROFESSOR

B. MORTALITY

The lower mortality of married adults versus unmarried is a consistent empirical finding across populations.

— Michael Rendall, professor of sociology, University of Maryland, 2011[71]

If marriage enhances the physical and mental health of individuals, it is reasonable to expect that married people live longer, as has been reported by numerous studies published over many decades and in various countries.[72]

In 1991, the late Robert Coombs, then a highly noted psychiatry professor at the University of California, Los Angeles, published a literature review of 130 empirical studies evaluating marital status and mortality. His analysis led him to conclude, "Virtually every study of mortality and marital status shows the unmarried of both sexes have higher death rates, whether by accident, disease or self-inflicted wounds, and this is found in every country that maintains accurate health statistics."[73]

Five years later, using mortality and population data from Statistics Netherlands, Inez Joung and colleagues calculated the relative risk of dying from twenty-nine specific causes of death.[74] They found that, compared to married men, unmarried men were at a higher risk of death in virtually every one of the twenty-nine categories. The specific causes of death that contributed disproportionately to the excess mortality of singles were "almost all" related to risk factors from unhealthy lifestyles.

The first published study on this topic was conducted more than 150 years ago by a British epidemiologist named William Farr. Using birth, death, and marriage records from the population of France, he discovered the unmarried died earlier and "in undue proportion" when compared to those who were married.[75]

Farr's simplistic statistical comparisons have since been developed into complex statistical evaluations of marital status, mortality, and disease. Modern statistical analysis has the

71 Rendall et al., "Protective Effect."
72 Gove, "Sex, Marital Status and Mortality"; Joung et al., "The Contribution of Specific Causes of Death to Mortality Differences by Marital Status in the Netherlands"; Roelfs et al., "Rising Relative Risk"; Hughes and Waite, "Marital Biography"; Jana Staton, "Making the Connection Between Healthy Marriage and Health Outcomes: What the Research Says" (National Healthy Marriage Resource Center, Oklahoma City, OK, 2009). Ikeda et al., "Marital Status."
73 Robert H. Coombs, "Marital Status and Personal Well-Being: A Literature Review," *Family Relations* 40 (1991): 97–102.
74 Joung et al., "The Contribution of Specific Causes of Death to Mortality Differences by Marital Status in the Netherlands."
75 William Farr, *Influence of Marriage on the Mortality of the French People* (London: Savill and Edwards, 1858).

capacity to appropriately isolate multiple factors influencing the data (such as age, sex, education, and race), thereby producing more nuanced conclusions and greatly enhancing our understanding of how marriage relates to mortality and morbidity. However, despite the greater complexity of present-day experimental design and advanced statistical analysis, the majority of published research still confirms Farr's primary conclusion: Married adults are more likely to live longer than their unmarried counterparts.

As an example of the greater complexity of today's studies, David Roelfs and researchers at the University of Louisville conducted a complex meta-analysis on data from ninety-five research studies, resulting in cumulative data on more than 500 million persons. Analyzing this large pool of data revealed that single people had a 30 percent greater risk of mortality compared to married persons. Further, when they used only the highest-quality data for analysis, single people still had a 24 percent higher risk of early death.[76]

This confirmed multiple earlier studies, including an evaluation of large-scale, pooled demographic data from United States' population surveys that revealed a "consistent survival advantage for married men and women over unmarried men and women" and "little evidence of mortality differences between never-married, divorced/separated and widowed statuses."[77] This research also showed that a survival "premium" existed in men, as well as an "overall marriage advantage" over women. However, according to this study, the advantage diminished over time.

A study of mortality in the elderly found that married individuals had a 12 percent reduction in their relative risk of death, compared to the other marital status groups.[78] This report was a meta-analysis of fifty-three published studies, and it concluded that "the marriage effect was robust" using various types of statistical analysis. Similarly, a Japanese study showed that the risk of dying for single men and women was 2 to 3.5 and 1.7 times higher, respectively, compared to their married counterparts.[79]

C. MENTAL HEALTH

The data on psychological well-being uniformly indicate that the married, at least with regard to psychological variables, are better situated than the unmarried.

— Walter Gove, professor emeritus of sociology, Vanderbilt University, Nashville, Tennessee, 1973[80]

Married couples have been shown to have superior mental health when compared to single, divorced, separated, or widowed persons, as measured by a variety of mental health indicators such as depression, self-reported happiness, life satisfaction, psychological well-being, and suicidal ideation.[81]

76 Roelfs et al., "Rising Relative Risk."
77 Rendall et al., "Protective Effect."
78 Lamberto Manzoli et al., "Marital Status and Mortality in the Elderly: A Systematic Review and Meta-analysis," *Social Science and Medicine* 64 (2007): 77–94.
79 Ikeda et al., "Marital Status."
80 Gove, "Sex, Marital Status and Mortality."
81 Steven Stack and J. Ross Eshleman, "Marital Status and Happiness: A 17-Nation Study," *Journal of Marriage and the Family* 60 (1998): 527–36; Waite and Gallagher, *Case for Marriage*; Schoenborn, "Marital Status and Health"; Hughes and Waite, "Marital Biography"; Paul R. Amato, "Marriage, Cohabitation and Mental Health," *Family Matters* 96 (2015): 5–13.

A 1991 literature review of more than 130 empirical studies found an "intimate link" between marital status and well-being.[82] Coombs reported that married men and women are generally happier and less stressed than the unmarried, stating that "the published research on personal well-being reveals a consistent pattern: Married individuals, especially married men, experience less stress and emotional pathology than their unmarried counterparts."[83] This effect has been found consistently in married couples from a across first-world nations and continents such as Canada, the United States, Australia, Europe, and Asia.[84]

In 1998, Steven Stack and J. Ross Eshleman, two American sociologists, compared happiness and marital status in eighteen thousand adults from seventeen industrialized countries, including Canada, the United States, Australia, Japan, and Britain, as well as European and Scandinavian nations.[85]

Overall, Stack and Eshleman found the following:

1. Married couples felt greater happiness than those in any other relationship status (cohabiting, divorced, separated, widowed, and single).
2. Marriage increases happiness substantially more than cohabitation, and was reported to be 3.4 times more closely associated with happiness than was cohabitation.
3. This held true for data from sixteen of the seventeen diverse nations studied and the strength of the positive association between marriage and happiness was similar in fourteen of seventeen countries. It should be noted that the sole exception was Northern Ireland and that a considerable amount of violence was occurring in that nation at the time of data collection (1981–1983).
4. Both husbands and wives experienced happiness to the same degree. That is, happiness was not more beneficial to men than to women, as some studies have shown.
5. Married couples had better health and a higher degree of financial satisfaction than those in other relationships. The authors suggested that these factors may play a role in linking marriage to greater happiness.

Two Canadian economists, John Helliwell, professor emeritus at the University of British Columbia's Vancouver School of Economics, and Shawn Grover, a policy analyst at Finance Canada, also utilized global data to elucidate a correlation between relationship status (married or single) and happiness over a lifetime.[86]

Data (from population surveys in the United Kingdom and the Gallup World Poll) was subjected to complex statistical analyses that controlled all confounding variables, thereby allowing the researchers to isolate changes in happiness over time.

When Grover and Helliwell portrayed their data graphically, they found that the amount of happiness experienced by most people over their lifetime resembled a U-shaped curve. That

82 Coombs, "Marital Status."
83 Ibid.
84 Averett et al., "In Sickness and in Health"; Amato, "Marriage, Cohabitation and Mental Health"; Stack and Eshleman, "Marital Status"; Shawn Grover and John F. Helliwell, "How's Life at Home? New Evidence on Marriage and the Set Point for Happiness" (working paper no. 20794, National Bureau of Economic Research, Cambridge, MA, 2014).
85 Stack and Eshleman, "Marital Status."
86 Grover and Helliwell, "How's Life at Home."

MARRYING VERSUS LIVING TOGETHER

MARRIAGE INCREASES HAPPINESS SUBSTANTIALLY MORE THAN LIVING TOGETHER. IN FACT, IT IS REPORTED TO BE 3.4 TIMES MORE CLOSELY ASSOCIATED WITH HAPPINESS THAN COHABITATION.

is, people experienced a great deal of happiness when they were young, followed by decreasing happiness as they approached middle age. However, as they continued to age, happiness once again rose to levels similar to that experienced during their youth. All persons exhibited this dip in happiness at midlife, regardless of marital status. However, the dip in well-being was much greater for those who were single than those who were married.

A separate analysis was performed to evaluate friendship as a possible mechanism that enhances the sense of well-being and satisfaction in married and cohabiting couples. They reported that couples who considered themselves to be each other's "best friend" experienced almost twice the life satisfaction and well-being as those who did not.

In sum, their analysis showed the following:[87]

1. Married people have greater life satisfaction than singles.
2. The benefits of marriage may be strongest immediately after marriage, but they persist over the long term.
3. Marriage appears to have the greatest impact on protecting happiness in midlife. People of every marital status experienced a dip in well-being at midlife (likely related to the burden of multiple obligations related to career, community, and family), but the drop was greater for unmarried persons, compared to married. Differences in happiness between the married and unmarried groups were greatest when people were in their forties and fifties, suggesting that marriage may act in some way to mitigate this diminished sense of happiness during midlife.
4. Only 50 percent of married and cohabiting people listed their partner as their best friend.

In his 1992 Canadian study mentioned above, White determined that married and cohabiting individuals had a higher sense of life satisfaction and well-being compared to singles, widowed, and separated/divorced persons.[88] However, it should be noted that the data White utilized was collected by Statistics Canada, which then grouped married and common-law data together in one category. This may have generated some ambiguity in the analysis since marriage is known to be a far more stable relationship than cohabitation.[89] Data for divorced

87 Ibid.
88 White, "Marital Status."
89 Ambert, "Cohabitation and Marriage"; Amato, "Marriage, Cohabitation and Mental Health."

and separated individuals was also combined, creating a similar uncertainty about data analysis, as separated individuals may or may not be permanently separated, as is the case with divorced couples.

Paul Amato used data from the National Survey of Adolescent to Adult Health to follow the mental health of Americans as they aged from their teens to their early thirties.[90] This longitudinal data set allowed him to compare changes in the same individuals over time as they underwent various life transitions, rather than comparing individuals at a set point (or cross section) in time. As a result, he was able to investigate how the transition from being single to marriage or non-marital cohabitation affected mental health both in the short and long term.

Once all other variables (e.g., age, education, work hours, children) were controlled through statistical analysis, Amato showed that the transition to marriage and non-marital cohabitation was associated with "significant improvements in peoples' mental health" for both men and women. This suggests that living with a partner, and not necessarily the "institution" of marriage, may be the key factor that improves mental health.

1. GENDER DIFFERENCES IN MENTAL-HEALTH BENEFITS

According to Amato, improvements in mental health (measured by reduced symptoms of depression and suicidal ideation) were initially experienced to a similar degree by both genders, but then diverged to reveal a longer-lasting mental health benefit for men and a temporary benefit for women.[91]

Men showed a non-significant but upward trend for depressive symptoms after five or more years of marriage, even though the mental-health gains from marriage remained higher and continued to persist at a higher level than that of single men.

In contrast, the mental health of women began to diminish just one year after marriage or entering cohabitation, as indicated by an increase in depression and suicidal ideation. Mental health continued to follow a downward trend over the years, suggesting a declining impact of the relationship (marriage or cohabitation) on the mental health of women. Kelly Musick and Larry Bumpass similarly showed that transitions into marriage were associated with increased happiness and decreased depression, but the effect dissipated over time, again suggesting diminishing relationship quality.[92]

While Amato showed that the mental-health improvements for women were temporary, others have shown that the mental health of women increased with time[93] or followed a U-shaped curve with happiness declining until midlife and then rising with age.[94] In contrast, a meta-analysis of 126 published, empirical articles reported that there was little support for gender differences in benefits following marriage,[95] as did Stack and Eshleman in their study of marriage in seventeen countries.[96]

90 Amato, "Marriage, Cohabitation and Mental Health."
91 Ibid.
92 Kelly Musick and Larry Bumpass, "Re-examining the Case for Marriage: Union Formation and Changes in Well-Being," *Journal of Marriage and Family* 74 (2012): 1–18.
93 Staton, "Making the Connection"; Hughes and Waite, "Marital Biography."
94 Grover and Helliwell, "How's Life at Home."
95 Robles et al., "Marital Quality."
96 Stack and Eshleman, "Marital Status."

Overall, the data is at best inconsistent in terms of reporting gender differences and how long mental-health benefits persist after marriage.[97]

There have been several theories put forth as to why these benefits may persist for men yet decline over time for women. In the past, it was argued that the inequalities of marriage (in terms of the wife performing most of the home duties and perhaps even doing this while working full-time outside the home) may be a factor. But such domestic and familial inequalities have faded over time and, as such, may no longer be a factor influencing depressive symptoms in women.[98]

More recent theories have suggested that women tend to be more sensitive to their relationships and more affected by relationship problems. The decline in mental health may reflect an increasing awareness of, or frustration with, such issues.[99]

Alternatively, it may be a function of the tendency for women to be more focused than men on the wedding in the time period before marriage. This heightened anticipation may result in a greater letdown once the wedding is over and the more mundane aspects of marriage become apparent.

2. CONTRARY REPORTS ON MENTAL-HEALTH BENEFITS

There is limited disagreement in the literature regarding improved mental health (increased happiness and decreased depression) following the transition into marriage. However, several studies have reported a negative association between marriage and mental health.

One of the few published studies that showed contrary results stems from the early work of two Canadian sociologists, Zheng Wu and Randy Hart. They reported that there were no changes in depression associated with marriage or cohabitation; their data also showed that depression increased and general health decreased the longer the union continued.[100] The researchers speculated that this was due to a diminished quality of the union over time.

Psychologists Bella DePaulo and Wendy Morris also claimed that the marriage benefit of better mental health does not bear up under scrutiny because research citing this effect only includes comparisons between married and unmarried, and overlooks differences that exist among categories for divorced, separated, and widowed.[101] Many of the studies reported herein did examine differences among all categories, thereby suggesting that the statement by these authors may be overly broad and generalized.

De Paulo and Morris theorize that much of the research in this area is biased because it is based on a number of assumptions (or presumptions) that are rooted in American society's "cult of the couple," such as the notion that everyone wants to be married and "those who have a sexual partnership are better people—more valuable, worthy and important." They further claimed there is an "ideology of marriage and family" that undergirds North American culture (and its sociological research culture) and perpetuates the "myth of marital bliss."

97 Carr and Springer, "Advances."
98 Amato, "Marriage, Cohabitation and Mental Health."
99 Staton, "Making the Connection."
100 Wu and Hart, "Effects of Marital and Non-marital Union."
101 Bella M. DePaulo and Wendy L. Morris, "Singles in Society and in Science" *Psychological Inquiry* 16 (2005): 57–83.

3. CONCLUSION

In general, most studies support the existence of the marriage advantage in mental health, yet offer ambiguous results about issues such as gender differences or the length of time that the benefits persist.[102] An assessment of the literature reveals that much of the confounding data is related to one or more of the following unresolved questions:[103]

1. Do the health benefits of marriage extend to other types of romantic unions? Why are cohabitation and remarriage often associated with reduced mental- and physical-health benefits?
2. Do the health benefits of marriage persist indefinitely, fade over time, or accumulate over time?
3. Are there gender differences in how the marriage advantage is experienced? Do husbands and wives experience the benefits of marriage to the same degree and for the same length of time?
4. Do marriage benefits result from selection or protection? Is there a causal relationship between marriage and improved health? Or does the better health of married couples reflect a pre-selection process that selects the happiest and healthiest people for marriage? In a statistical review, Rendall and his colleagues attributed inconsistent findings and contrary data on selection and protection to errors in statistical analysis or to inadequate data samples.[104]

The marriage advantage provides mental-health benefits. However, the above questions have yet to be fully answered, and the ambiguity that they create is the focus of much current research and discussion.

IV. SOCIOLOGICAL AND PSYCHOLOGICAL MECHANISMS THAT MEDIATE THE MARRIAGE ADVANTAGE

This report has previously alluded to various behavioural and functional mechanisms that may mediate the effect of marriage on human health and longevity. Known pathways appear to be linked to three major spheres of study: sociological, psychological and physiological. Sociological and psychological theories have existed for a number of years, while the more intricate physiological pathways have been identified more recently.

102 Amato, "Marriage, Cohabitation and Mental Health"; Stack and Eshleman, "Marital Status"; Robles et al., "Marital Quality and Health."
103 Carr and Springer, "Advances"; Rendall et al., "Protective Effect"; Amato, "Marriage, Cohabitation and Mental Health."
104 Rendall et al., "Protective Effect."

A. SOCIOLOGICAL MECHANISMS

Within the sociological sphere there are two competing explanations: the marriage selection hypothesis and the marriage protection hypothesis. While researchers tend to favour particular theories, it is most likely that the various mechanisms acting within these broad categories are not mutually exclusive. As such, it may be that both of these mechanisms play an active role in establishing and sustaining the benefits of the marriage advantage.[105]

1. THE MARRIAGE SELECTION HYPOTHESIS

The marriage selection hypothesis is based on the reality that people do not marry at random; they actively choose or select their partners. It has been suggested that emotionally stable, happy, and healthy men and women are more likely to be selected as marriage partners and, consequently, live longer, healthier lives.[106] Conversely, individuals who may have serious health or emotional problems are more likely to remain single. Even if they do marry, they are more likely to become separated, divorced, or widowed.

Consequently the selection hypothesis suggests that the marriage advantage is not a product of marriage itself; rather, it is a function of the pre-selection of the healthiest individuals into marriage.[107]

That is, according to this hypothesis, some married couples may experience greater health benefits because they were mentally and physically healthier than others prior to getting married. This may hold true in some cases, but the selection hypothesis fails to explain why couples report *improved* mental and physical health after the transition into marriage or why happy couples experience a decline in mental and physical health if they transition out of marriage through divorce or the death of a spouse.[108]

In addition, it can be observed that some individuals with serious mental or physical illnesses do marry. If there is a resultant improvement in mental health, then marriage itself must exert a positive impact on well-being.[109] As a result, it is often claimed that there is insufficient evidence to support the selection hypothesis.[110]

2. THE MARRIAGE PROTECTION HYPOTHESIS

The marriage protection hypothesis is a broad-based theory that is now favoured by a majority of researchers as the most significant determiner of the better mental and physical health of married adults.[111] It suggests that there is something specific to marriage itself that enhances well-being and health. A host of protective benefits exist within the marriage relationship and better enable married couples to survive and thrive. In general, these protection benefits are very practical in nature, and they include the following:

105 Guner et al., "Does Marriage Make You Healthier?"; Carr and Springer, "Advances."
106 Rendall et al., "Protective Effect."
107 Guner et al., "Does Marriage Make You Healthier?"
108 Hughes and Waite, "Marital Biography"; Amato, "Marriage, Cohabitation and Mental Health."
109 Ambert, "Cohabitation and Marriage."
110 Coombs, "Marital Status."
111 Roelfs et al., "Rising Relative Risk"; Rendall et al., "Protective Effect"; Coombs, "Marital Status."

1. **Greater social support**. The integration of individuals into marriage, family, and community is a significant step that provides them with the benefits of daily living and interacting with others. Such positive interactions provide a stress buffer to reduce anxiety and blood pressure, as well as "a sense of meaning, of purpose, of obligations to others, and of belonging," all of which are important in enhancing/determining life satisfaction and, ultimately, health.[112]
2. **Regulatory influence.** Marriage has been shown to exert a regulatory influence on lifestyle, particularly in men.[113] Marriage has been shown to (1) attenuate the desire to participate in risky behaviours that may have been a part of their single lifestyle (such as excessive drinking, reckless driving, or smoking), and (2) encourage participation in positive lifestyle behaviours such as eating healthier, getting more sleep, and exercising regularly. Researchers have variably referred to this regulatory effect as "social control," "the power of persuasion," or even "the nag factor," but the influence of a spouse on behaviour can play a large role in creating and sustaining the protective effect of marriage on health and longevity.[114]
3. **Mutual monitoring of health.** Once couples have made a mutual investment in their future, they tend to monitor each other's health and encourage each other to invest more effort in staying healthy and doing all they can to build a successful future together. This includes such practical measures as encouraging each other to go to the doctor as soon as there is a possible problem or taking proactive measures such as participating in cancer screening programs.[115] A spouse can also play a pivotal role as a health-care advocate on behalf of their ill partner. Evidence exists to show the significance of having a spouse to encourage proper medical care and to advocate for the best cancer care: It has been reported that patients with a spouse are diagnosed with cancer earlier; are in better health when diagnosed with a serious disease; and are more likely than unmarried persons to get the best cancer treatments, have life-saving surgeries, adhere to treatment regimes, and maintain follow-up protocols.[116]
4. **Practical care.** A spouse is present to provide emotional support, positive encouragement, and practical care during illness. There is also a significant, practical value to having a caring and comforting spouse present during illness to assist in making (and keeping) appointments, prepare food, and assist with required care and treatment regimes. They can also provide (or be) the motivation for their spouse to want to get better or to want to continue living.[117]
5. **Greater economic resources.** It is widely accepted that married couples do better financially, in part due to pooled incomes and economies of scale. It has also been shown that more money means access to better medical care; this may not be true for Canada, where there is a universal health-care system, but it can be a factor for Canadians who wish to avail themselves of treatment programs and testing procedures that are not covered by public health care. [118]

112 Rendall et al., "Protective Effect"; Waite and Lehrer, "Benefits from Marriage."
113 Rendall et al., "Protective Effect"; Gove, "Sex, Marital Status and Mortality."
114 Schoenborn, "Marital Status and Health"; Staton, "What Is the Relationship."
115 Jim P. Stimpson et al., "The Effect of Marriage on Utilization of Colorectal Endoscopy Exam in the United States" *International Journal of Cancer Epidemiology, Detection and Prevention* 36, no. 5 (2012): e325–e332.
116 Aizer et al., "Marital Status"; Kissane, "Chemotherapy"; Wang et al., "Marital Status."
117 Kissane, "Chemotherapy."
118 Aizer et al., "Marital Status"; Waite and Lehrer, "Benefits from Marriage"; Staton, "What Is the Relationship"; Staton,

B. PSYCHOLOGICAL MECHANISMS

Research suggests that various psychological factors also are involved in mediating some aspects of the marriage advantage. These include emotional attachment and friendship.

1. EMOTIONAL ATTACHMENT

The information provided herein is empirical: carefully measured evidence to support the mental and physical health benefits of marriage. Data and statistics are necessary to provide a strong case for the marriage advantage, but focusing solely on numbers can obscure the impact of the one element of marriage that cannot be measured—love.

All human beings have a deep, innate need for love and a connection to other human beings. For many adults, that need is filled by marriage.

Marriage involves a strong, permanent emotional attachment that enhances happiness and health when intact. Married people experience less physical and emotional pathology because they have continuous companionship with a spouse who provides interpersonal closeness, emotional gratification, and support in dealing with daily stress.[119] If that attachment is broken, research has demonstrated that there are serious short- and long-term consequences to an individual's mental and physical health.[120]

Marriage brings improved mental and physical health to married couples because it is a permanent union based on companionship, intimacy, sexual fulfillment, emotional support, emotional security, and a mutual investment in creating a happy and healthy future. All of this functions to create a sense of meaning and purpose in one's life that results in greater happiness and fulfillment.[121]

2. FRIENDSHIP

Two Canadian economists, Shawn Grover and John F. Helliwell, analyzed the attachment and sense of support that exists between husband and wife.[122] They hypothesized that much of the enhanced sense of well-being and life satisfaction that married couples experience is mediated through social channels such as friendship. Using complex mathematical analysis, they demonstrated that couples who declared they were best friends had life-satisfaction scores and a sense of well-being twice that of married and cohabitating couples who did not. On that basis, Grover and Helliwell suggested that friendship serves as a mediator of the unique benefits of marriage.

"Making the Connection."

119 Coombs, "Marital Status."

120 Hughes and Waite, "Marital Biography"; Janice Kiecolt-Glaser et al., "Marital Quality, Marital Disruption and Immune Function," *Psychosomatic Medicine* 49 (1987): 13–34. Janice Kiecolt-Glaser et al., "Marital Discord and Immunity in Males," *Psychosomatic Medicine* 50 (1988): 213–29.

121 Rendall et al., "Protective Effect"; Waite and Lehrer, "Benefits from Marriage"; Guner et al., "Does Marriage Make You Healthier?"; Roelfs et al., "Rising Relative Risk."

122 Grover and Helliwell, "How's Life at Home."

V. MARRIAGE QUALITY

Marital satisfaction is "every bit as important to survival after bypass surgery as more traditional risk factors like tobacco use, obesity and high blood pressure."

— Harry Reis, Department of Psychology, University of Rochester, 2012[123]

The evidence presented herein demonstrates the clear impact marriage can have in sustaining mental and physical health, overcoming cancer, mitigating cardiovascular disease, and improving outcomes from cardiac surgery.

The plethora of research affirming these associations may create the impression that marriage is universally protective for all persons, at all times, and in all health outcomes. Yet these studies have also reported that differences exist within different types of relationships (legal marriage is typically found to be more protective than cohabitation or long-term same-sex unions)[124] and within marriages (first marriage is more protective than remarriage,[125] general well-being is twice as high for married couples who consider themselves to be best friends,[126] and protective health benefits can vary, i.e., increase[127] or diminish,[128] as the marriage relationship continues[129] and according to gender[130]).

Just as research has shown the power of positive interactions (human attachment and human touch) to hasten healing[131] and diminish stress,[132] so too there is a growing body of research which shows that negative interactions between married couples have a direct (and negative) impact on the three physiological systems that mediate the marriage advantage—the immune, neuroendocrine, and cardiovascular systems.[133] Thus the degree to which the couple has positive or negative interactions will determine whether the couple gains life-extending health benefits or suffers from impaired health as a result of their union.

Consequently the most recent research on the marriage advantage has moved beyond health comparisons based on marital status to health comparisons based on variations in marital quality. For the most part, the findings have essentially been what we would expect:[134] High-quality marriages are defined by high satisfaction with the relationship, predominantly positive attitudes toward one's partner, low levels of hostility and negative behaviour, and generally good health. In contrast, a low-quality marriage is characterized by low satisfaction, predominantly negative attitudes toward one's partner, and high levels of hostile/negative

123 University of Rochester Medical Center Press Release, "Is Marriage Good for the Heart?," August 22, 2011, http://www.rochester.edu/news/show.php?id=3897.
124 Carr and Springer, "Advances."
125 Hughes and Waite, "Marital Biography."
126 Grover and Helliwell, "How's Life at Home."
127 Guner et al., "Does Marriage Make You Healthier?"; Hughes and Waite, "Marital Biography."
128 Alviar et al., "Association of Marital Status."
129 Musick and Bumpass, "Re-examining."
130 Amato, "Marriage, Cohabitation and Mental Health."
131 Aizer et al., "Marital Status."
132 James A. Coan et al., "Lending a Hand: Social Regulation of the Neural Response to Threat," *Psychological Science* 17, no. 12 (2006): 1032–39.
133 Carr and Springer, "Advances"; Robles et al., "Marital Quality and Health"; Hughes and Waite, "Marital Biography"; Janice K. Kiecolt-Glaser et al., "Hostile Marital Interactions, Pro-inflammatory Cytokine Production and Wound Healing," *Archives of General Psychiatry* 62, no. 12 (2005): 1377–84; King and Reis, "Marriage and Long-Term Survival."
134 Robles et al., "Marital Quality and Health."

behaviour. The latter relationships are linked to a host of adverse health issues that can affect individuals in both the short- and long-term.[135]

The health-related consequences experienced during a low-quality marriage (or through the death of a spouse) tend to linger even once he or she leaves the destructive marriage. Hughes and Waite showed that those who undergo any kind of a "marital disruption" (through divorce, separation, or death) continued to experience damaged health for years afterward, even if they happily remarried into a high-quality marriage.[136]

This research showed that divorced or widowed persons were 20 percent more likely to have a chronic health condition (heart disease, diabetes, or cancer) and 23 percent more likely to have limitations to their mobility. Although they regained some degree of health protection by remarrying, the study showed that people in second marriages still had 12 percent more chronic health problems and 19 percent more problems with mobility.[137] This suggests that a second marriage can restore some measure of health, but couples will never fully achieve the level of good health enjoyed by happily married people in a first marriage.

According to Theodore Robles and Janice Kiecolt-Glaser, "marital strain can be viewed as a repeated, perhaps even chronic, social stressor," and chronic social stressors are strongly tied to negative health outcomes.[138] Indeed, marital stress and change in marital status (through death, divorce, or separation) are considered to be so significant to health that one researcher claimed a divorce can be just as bad for your health as smoking a pack of cigarettes per day.[139]

The following symptoms discussed throughout this section demonstrate the influence of an unhealthy marriage on the body's physiology.

A. INCREASED BLOOD PRESSURE

Researchers from Brigham Young University found that both marital status and marital quality were associated with changes in blood pressure.[140] When they correlated blood-pressure readings in married couples and singles who first indicated their satisfaction with life (SWL) via questionnaires, they found that married individuals who were the most satisfied with life had the lowest blood pressure of any group. Couples who were in low-quality marriages and had a diminished SWL had higher blood-pressure readings than both happily married couples and singles. This led the authors to conclude, "Marriage must be of a high quality to be advantageous. In other words, one is better off single than unhappily married."

A number of studies have made similar reports, and it has been reported that hostility and marital dissatisfaction may account for as much as 50 percent of the variance in women's systolic blood pressure.[141]

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135 Hughes and Waite, "Marital Biography."
136 Ibid.
137 Ibid.
138 Robles and Kiecolt-Glaser, "Physiology of Marriage."
139 Staton, "What Is the Relationship."
140 Julianne Holt-Lunstad et al., "Is There Something Unique About Marriage? The Relative Impact of Marital Status, Relationship Quality and Network Social Support on Ambulatory Blood Pressure and Mental Health," *Annals of Behavioral Medicine* 35, no. 2 (2008): 239–44.
141 Robles and Kiecolt-Glaser, "Physiology of Marriage."

B. INCREASED CARDIAC RISK

In their study mentioned above, King and Reis, psychologists at the University of Rochester, tracked 225 people who had coronary artery bypass surgery between 1987 and 1990. They found that happily married people were more than three times as likely to be alive fifteen years later.[142]

King and Reis asked the participants to provide their marital status and rate their relationship satisfaction at the time of surgery and one year later. They found that 83 percent of women who said they were happily married just after surgery were still alive fifteen years later. In contrast, just 28 percent of women who had reported low satisfaction scores for their marriages were alive at the fifteen-year mark.

The results were somewhat different for men, but significant differences were still apparent: 83 percent of men who had satisfying marriages were alive fifteen years post-surgery, compared to 60 percent of men in unhappy marriages.

Marital satisfaction appears to be highly significant to keeping women alive after heart surgery, while men seemed to gain an enhanced survival benefit by simply being married. This data has significant implications for physicians as they evaluate an individual's risk factors prior to high-risk heart surgery, and then consider how to mitigate those risks. According to King, "It's important to look at the conditions that allow some patients to beat the odds."[143]

C. INCREASED DEPRESSION

Research has shown that those in unhappy marriages were twenty-five times more likely to develop a major depressive disorder, and had a tenfold increase in the risk for depressive symptoms.[144]

Other studies have documented greater depression in troubled marriages,[145] while the study by Averett and colleagues, which utilized Canadian data, found no evidence of diminished mental-health status in divorced women.

D. INCREASED TIME FOR WOUNDS TO HEAL

For more than two decades, Ohio State University psychologist Janice Kiecolt-Glaser and her immunologist husband Ronald Glaser have collaborated on research in the field of marriage and health. In one of their studies, they applied blister wounds to the arms of married couples, and then assigned them a contentious topic for a thirty-minute discussion.[146] They took blood samples from each person over the next twenty-four hours to determine the levels of cytokine production at the wound site and in the blood system.

Cytokines are a broad family of intercellular messengers that have a number of local and systemic effects. Locally, their presence stimulates the immune system to initiate the healing process at the site of a wound. However, over a period of time, sustained, high concentrations

142 King and Reis, "Marriage and Long-Term Survival."
143 Ibid.
144 Kiecolt-Glaser et al., "Hostile Marital Interactions."
145 Robles and Kiecolt-Glaser, "Physiology of Marriage"; Hughes and Waite, "Marital Biography"; Robles et al., "Marital Quality and Health."
146 Kiecolt-Glaser et al., "Hostile Marital Interactions."

A MAJOR CAVEAT

AN UNHEALTHY MARRIAGE = AN UNHEALTHY LIFE.

RESEARCH SHOWS THAT NEGATIVE INTERACTIONS BETWEEN MARRIED COUPLES HAVE A DIRECT AND NEGATIVE IMPACT ON THE IMMUNE, NEUROENDOCRINE AND CARDIOVASCULAR SYSTEMS.

of pro-inflammatory cytokines in the blood stream cause chronic inflammation that has been linked to various diseases such as cardiovascular disease, arthritis, osteoporosis, and type 2 diabetes.[147]

The study showed that blister wounds in couples with higher levels of conflict (or who had a more hostile interaction) healed at a rate that was just 60 percent of the rate for couples who had their discussions with low conflict levels. Further, blood tests taken on the morning after the argument showed that high-conflict couples had low cytokine activity at the wound site, compared to low-conflict couples, meaning that the healing process was delayed. In addition, the plasma levels of pro-inflammatory cytokines associated with disease were elevated in high-conflict couples, thereby posing a potential risk for chronic illness.[148]

The impact of conflict on the body's healing process was unmistakable, making this research particularly relevant to individuals recovering from injuries or surgery. Kiecolt-Glaser, the lead author, says a sufficient body of data now exists to suggest that hospitals should do all they can to enhance healing and recovery in patients by reducing stress prior to and after surgery.[149] That is, patients should be psychologically prepared for what they are facing before they undergo surgery.

E. DECREASED IMMUNE FUNCTION

A growing body of research indicates that negative psychological states (such as stress and depression) may influence health and disease by altering the immune system. Kiecolt-Glaser and Glaser pioneered efforts to relate stress (and then marital quality) to a diminished immune system by measuring the release of stress hormones, white blood cells that fight disease, antibody production, and the ability of cells to repair wounds in various stress situations.[150] One of their first collaborations showed that the immune systems of medical students in the midst of final exams were significantly weakened, as indicated by a decrease in white blood cells.[151]

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147 Ibid.

148 See the following section, "Physiological Mechanisms That Mediate the Marriage Advantage," for more on cytokines.

149 Ohio State University Press Release, "Stress Substantially Slows Human Body's Ability to Heal," December 5, 2005, https://researchnews.osu.edu/archive/wounheal.htm (see Kiecolt-Glaser et al., "Hostile Marital Interactions").

150 Tara Parker-Pope, "Is Marriage Good for Your Health?," *New York Times*, April 14, 2010, http://www.nytimes.com/2010/04/18/magazine/18marriage-t.html?_r=0.

151 Janice Kiecolt-Glaser et al., "Psychosocial Modifiers of Immunocompetence in Medical Students," *Psychosomatic Medicine* 46, no. 1 (1984): 7–14.

COUPLES WHO CONSIDER EACH OTHER BEST FRIENDS EXPERIENCE TWICE THE LIFE SATISFACTION AS THOSE WHO DO NOT

Later on, they assessed immune function in women[152] and then men[153] who were either married or separated/divorced. Women in unhappy, low-quality marriages were significantly more likely to suffer from depression and have a limited immune response when compared to happily married women. Researchers also found that the amount of time (since the separation) and the degree of attachment to their ex-husbands were significant predictors of psychological symptoms and depressed immune function. That is, those women who were unable to break their emotional connections to their ex-husbands were more likely to suffer from depression and lowered immunity.

The impact of marital disruption on men was somewhat different.[154] Researchers reported that separated/divorced men were more distressed, lonelier, and had dealt with a more recent illness than married men. Similar findings were reported for men in unhappy, low-quality marriages. However, it should be noted that separated/divorced men who had initiated the separation were less distressed, had better health, and had greater immune function than the men who had not.

Later on, Kiecolt-Glaser and Glaser looked at the immune response of couples as they were undergoing a marital dispute. Couples were assigned discussion topics that were known to be contentious in their relationship.[155] Researchers evaluated immune function by taking blood samples during conflict and measuring known immune markers. It should not be surprising that couples who demonstrated the most negative and hostile behaviours during their conflict discussion also experienced the largest declines in immune-system function.

F. INCREASED LEVELS OF STRESS HORMONES

A study in the journal *Stress* showed that the long-term bonds of marriage can serve as a buffer against stress by altering hormone concentrations.[156] Cortisol is a steroid hormone that is released by the adrenal gland during times of stress and is greatly affected by psychological and social circumstances. High levels of cortisol over time are also known to suppress the immune system. Researchers found that single or "unpaired" graduate students at the University of Chicago School of Business had higher cortisol levels than married people in response to stress situations (completing a computerized economic decision-making test). According to Dario Maestripieri, "Marriage . . . has a dampening effect on cortisol responses to psychological stress," and therefore it "should make it easier for people to handle the other stressors in their lives."[157]

152 Kiecolt-Glaser et al., "Marital Quality."
153 Kiecolt-Glaser et al., "Marital Discord and Immunity in Males."
154 Ibid.
155 Parker-Pope, "Is Marriage Good for Your Health?"
156 Maestripieri, "Hormonal Responses."
157 University of Chicago Press Release, "Marriage and Committed Relationships." See Maestripieri, "Hormonal Responses."

Over the long term, this "dampening effect" may prove to be what sustains a marriage. In a 2003 study, Kiecolt-Glaser and her colleagues at Ohio State University found that neuroendocrine function during arguments in the first year of marriage was positively related to marital dissolution or marital satisfaction, ten years later.[158] Researchers measured levels of stress hormones in ninety newlywed couples during (and after) discussion on a contentious issue. When these same couples were re-evaluated ten years later, they found that 19 percent of the couples had split; further, individuals from divorced or separated couples had scored the highest in stress hormone levels when arguing as newlyweds.

VI. PHYSIOLOGICAL MECHANISMS THAT MEDIATE THE MARRIAGE ADVANTAGE

Overall, it appears that research in the area of marriage and health has progressed through three distinct levels, or waves, of studies. The first wave of research linked marriage, and then marital status, to mortality. The second wave evaluated marital status in terms of its impact on specific diseases and health outcomes. The third, more recent wave of research that has been established is characterized by advances in laboratory techniques that have allowed researchers to identify some of the underlying physiological mechanisms by which marriage affects health outcomes.

While there is sufficient evidence to claim with certainty that the marriage advantage exists, and that it is "an important determiner of health" for married couples,[159] it remains to be conclusively proved exactly "how" the intangible bonds of a marriage are transformed into physiological mechanisms that create and sustain this influence on human health and mortality. It appears that there is no one biological pathway that produces the marriage advantage; many have already been found, and there may still be myriad pathways to discover.

Sociological and psychological mediators are largely linked to social and emotional support. That is, an enlarged, supportive, caring social network is the most important factor in protecting married couples from stress and helping them to cope with stressful situations.[160]

In contrast, the physiological mediators are more closely tied to the stress buffering hypothesis, which emphasizes the body's physiological response to stress as the means to reduce the amount of stress a couple feels and helps them cope with it.

It is likely that the pathways related to social support and stress buffering have various points of intersection and therefore should not be considered as acting independently from each other.[161]

158 Janice Kiecolt-Glaser et al. "Love, Marriage and Divorce: Newlyweds' Stress Hormones Foreshadow Relationship Changes," *Journal of Consulting and Clinical Psychology* 71 (2003): 176–88.

159 Joung et al., "The Contribution of Specific Causes of Death to Mortality Differences by Marital Status in the Netherlands."

160 Robles and Kiecolt-Glaser, "Physiology of Marriage."

161 Roelfs et al., "Rising Relative Risk."

For example, consider a situation in which a spouse is recovering from a heart attack. According to research, the comfort, encouragement, touch, and presence of a caring spouse activates stress-buffering, physiological mechanisms that reduce the stress felt by a sick partner. Reduced stress alters the concentrations and release of stress hormones, which in turn triggers a reduction in blood pressure and heart rate, both of which are beneficial to the patient's comfort and recovery.

How does a healthy, low-conflict marriage influence the body's physiological systems to stimulate healing, health, and happiness? Conversely, how does an unhealthy, high-conflict marriage influence the very same physiological systems to cause a host of pathologic conditions?

Over the past decade or so, researchers have begun to recognize critical biological pathways that translate the messages from a good or bad marriage into physiological changes that have enormous implications for human health.

Broadly, it has been shown that the marriage advantage exerts its impact on human health via one or more of the following three physiological systems: neuroendocrine, immune, and cardiovascular.[162] In addition, studies have revealed that the primary mediators for these physiological responses are stress, inflammation, and hormones.[163]

A. STRESS

A marriage that has high levels of hostility provides an important, but generic, example of how these physiological systems and mediators may work together to induce pathologies.

- Over time, a conflicted marriage produces high levels of stress in the husband and wife. In response, ACTH (adrenocorticotropic hormone) is released from the pituitary gland.
- ACTH is a chemical messenger that travels to the adrenal glands, where it stimulates the glands to produce and release another hormone called cortisol (also known as the stress hormone).
- Cortisol metabolizes the white blood cells that are needed by the immune system to fend off infection. By inhibiting this response, the body becomes vulnerable to infection or injury, thereby increasing the likelihood of morbidity and mortality for couples with bad marriages.
- When certain types of white blood cells (called helper T-cells and macrophages) are metabolized, they release cytokines. As described above, one particular type of cytokine, the pro-inflammatory cytokine, can be beneficial to healing when released as an acute response to stress or injury. However, when the release of pro-inflammatory cytokines is sustained over time, resulting in high concentrations of this protein, it produces chronic inflammation that is associated with a host of health problems.

162 Robles and Kiecolt-Glaser, "Physiology of Marriage."

163 Janice Kiecolt-Glaser et al., "Close Relationships, Inflammation and Health," *Neuroscience and BioBehavioral Reviews* 35 (2010): 33–38.

B. INFLAMMATION AND HORMONES

Chronic inflammation is considered to be a "robust and reliable predictor of all causes of mortality in older adults."[164] It is generally associated with increased blood levels of C-reactive protein (released by the liver to respond to inflammation and therefore serving as a biomarker to detect inflammation), and various pro-inflammatory cytokines such as interleukin-1 (IL-1), interleukin-6 (IL-6), and tumour necrosis factor-alpha (TNF-alpha).

Evidence shows that elevated levels of these proteins are prognostic for a variety of diseases, including cardiovascular disease, type 2 diabetes, and Alzheimer's. Further, high concentrations are known to enhance physical decline, leading to frailty, disability, and death.[165]

Inflammation acts via different pathways. For example, it is believed that inflammation caused by pro-inflammatory cytokines disrupts the cells lining the arteries in such a way as to increase the adhesion of other inflammatory cells that result in atherosclerosis, which increases the likelihood of cardiovascular disease.[166]

Elevated levels of C-reactive protein and IL-6 are both associated with inflammation and the development of heart disease.[167] A study from the Harvard School of Public Health showed that socially isolated men had higher levels of IL-6, a heightened risk for heart disease, and a twofold higher risk of mortality compared to men who were more socially integrated.[168] Eric Loucks suggested that socially isolated people are more likely to smoke, be less physically active, be depressed, and suffer from anxiety. All of these factors have been shown to increase levels of IL-6 in the blood, thereby enhancing inflammation and the risk of heart disease.

In type 2 diabetes, excessive food intake induces a pro-inflammatory state where elevated levels of cytokines (IL-6 and TNF-alpha) act to suppress insulin and alter the regulation of blood-sugar levels.[169]

There is a "robust association between inflammation and depression," and evidence suggests that depression may enhance the release of cytokines in response to stress.[170] In fact, researchers have been able to create depression by using drugs to induce inflammation.

Based on the above, it is obvious that depression and prolonged stress in a marriage could contribute to a chronic state of inflammation that may then result in depression, cardiovascular disease, diabetes, and a host of other health problems.

Thus far the physiological mechanisms described herein have led to health problems associated with poor-quality marriages. There are fewer studies that have elucidated the biological pathways that enhance health in high-quality marriages. However, one key mediator in protecting health is human touch.

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164 Ibid.
165 Ibid.
166 Ibid.
167 Kathi L. Heffner et al., "Social Isolation, C-Reactive Protein and Coronary Heart Disease Mortality Among Community-Dwelling Adults," *Social Science and Medicine* 72, no. 9 (2011): 1482–88.
168 Eric B. Loucks, "Harvard Study Shows That Loneliness Really Can Break a Man's Heart," *National Review of Medicine* 2, no. 14 (2005).
169 Kiecolt-Glaser et al., "Close Relationships, Inflammation and Health."
170 Ibid.

C. HUMAN TOUCH AS A BUFFER AGAINST STRESS

Section V of this report ("Marriage Quality") described the innovative experiment by James Coan and his colleagues in demonstrating the protective effect of having spouses hold hands when one of them was exposed to a potential threat.[171] Using MRI brain scans, he showed that any human touch (even holding the hand of a stranger) moderately reduced the stress response shown by the brain. However, holding the hand of a spouse greatly reduced the stress response and also reduced the feeling of pain.

In 2013, Susan Johnson of the University of Ottawa joined with Coan to use this protocol to test the impact of hand-holding on stress in a troubled marriage.[172] Couples who were in relational distress underwent initial MRI studies that mimicked those of Coan and his colleagues. They demonstrated that hand-holding in couples with a poor-quality marriage failed to provide any protection from the stress response; holding the hand of a stranger afforded more protection than that of the husband in a distressed marriage.[173]

Couples then attended twenty sessions of emotionally focused therapy (EFT), which focuses on restoring the broken bonds of attachment or an emotional disconnection. Subsequent MRI scans (with the same protocol as previous) showed that the husband's presence helped them cope far better, as it reduced the pain of the shock.

Researchers from Brigham Young University evaluated the physiological impact of both regular and repeated "warm touch" (whereby couples use physical touch such as hand-holding or cuddling to enhance the bonds of attachment) between married couples.[174] Couples underwent physiological assessments for all stress indicators (e.g., stress hormone levels, blood pressure) and were then assigned to weekly sessions where they were introduced to methods of "warm touch" as a means of support and communication. They were then told to practice the techniques at home. After four weeks, they underwent another physiological assessment, and researchers found that the couples' use of warm touch reduced the stress response. Tests revealed that these couples had higher levels of oxytocin (a hormone secreted in response to bonding) and decreased levels of alpha amylase (a salivary enzyme that serves as a marker for stress). In addition, husbands benefited from lowered levels of ambulatory blood pressure.

These studies reveal the power of human touch to influence physiological pathways. A warm touch can alter the stress response by the brain, decrease the experience of pain, lower blood pressure, and reduce biological stress markers.

171 Coan et al., "Lending a Hand."
172 Sue M. Johnson et al., "Soothing the Threatened Brain: Leveraging Contact Comfort with Emotionally Focused Therapy," *PLOS One* (2013): http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0079314.
173 Ibid.
174 Julianne Holt-Lunstad et al. "Influence of a 'Warm Touch' Support Enhancement Intervention Among Married Couples on Ambulatory Blood Pressure, Oxytocin, Alpha Amylase and Cortisol," *Psychosomatic Medicine* 70 (2008): 976–85.

IF WE COULD PACKAGE IT IN A PILL, MARRIAGE WOULD QUALIFY AS A WONDER DRUG.

— KATE LUNAU, HOW MARRIAGE CAN SAVE YOUR LIFE, MACLEAN'S, JANUARY 9, 2014

VII. PUBLIC POLICY IMPLICATIONS

Finding a way to mimic the benefits of marriage could well be the most critical health challenge of our time.

— Kate Lunau, *Maclean's*, 2014[175]

It is time to change the public conversation about marriage.

For too long, Canada's public discussion on marriage has been reduced to statistics that portray it as a decaying institution with a declining influence on the choices of individuals and the policies established by governments.

The problem is not that the statistics are wrong; the most recent data available (Canada's 2011 Census) supports the above description of the institution of marriage. When marital-status data from 2011 is compared to that obtained three decades ago (in the 1981 Census), the trends clearly point to Canadians' diminished participation in married life.[176]

1. The number of new marriages is decreasing:

   1981: 190,088

   2008: 147,848

2. The number of common-law unions is increasing:

   1981: 3.8 percent of population (aged fifteen and over) lived in common-law union

   2011: 11.5 percent

3. The number of unmarried Canadians (single, separated, divorced, or widowed) is increasing:

   1981: 39.1 percent unmarried

   2011: 53.6 percent unmarried

There is a growing trend for Canadians to bypass marriage in favour of living in a common-law relationship or remaining unmarried. This presents a rather grim picture for the future of a foundational institution that has, throughout history, shaped individual lives, communities, and societies. Not surprisingly, as the number of marriages has diminished, so have govern-

175 Kate Lunau, "How Marriage Can Save Your Life," *Maclean's*, January 9, 2014, http://www.macleans.ca/society/health/how-marriage-can-save-your-life/.

176 Anne Milan, "Marital Status: Overview, 2011," Statistics Canada, last modified November 30, 2015, http://www.statcan.gc.ca/pub/91-209-x/2013001/article/11788-eng.htm.

ment efforts to maintain or create legislation that affirms marriage as a unique institution that makes a strong (and necessary) contribution to society.

Yet the evidence presented herein suggests that we would be remiss to make a judgment about the societal value of marriage based solely on demographics (and, inevitably, the public perception they create). There is a plethora of strong, empirical research which suggests that marriage could have a significant and positive impact on the health and well-being of married couples and, by logical extension, the health and well-being of their children, families, and ultimately Canadian society.

Research has shown that marriage can act via various pathways to enhance mental and physical health, increase cancer survival rates, mitigate cardiovascular disease, and improve outcomes after cardiac surgery.

For example, Aizer and colleagues evaluated the records of 735,000 cancer patients who suffered from the ten most common cancers in the United States. They found the following:

1. Married cancer patients lived, on average, 20 percent longer than those who were not married.
2. *For five of the ten most common cancers (prostate, breast, colorectal, esophageal, and head/neck), the survival benefit associated with marriage was larger than the published survival benefit of chemotherapy.*
3. The survival rate for head and neck cancers was 33 percent higher for married patients.
4. Married patients presented much earlier in the course of their disease. Non-married patients were 17 percent more likely to present with metastatic (advanced) disease.
5. Married patients were more likely to receive/ask for the best, and most definitive, treatment protocols.
6. Married patients were more adherent to required treatment regimes.

"Health is the single most important indicator of the overall wellbeing of a society,"[177] and according to *Maclean's*, "the benefits of marriage on health [are so widely acknowledged] that there is a case to be made for it as a major public health issue."[178] As a result, all of the above findings (and a host of other findings cited in this report) have significant health-care implications for politicians and public policy makers.

A. FOR PUBLIC HEALTH CARE

The prevailing opinion may be that marriage is a private choice with no public consequences. Yet the data herein demonstrate that marriage has very public consequences in terms of resource utilization: unmarried individuals (single, divorced, separated, or widowed) are at greater risk of disease and more closely associated with poor mental and physical health. In a country with public health care and social services, this information has significant implications for health-care costs and utilization of finite health-care resources.

177 Carr and Springer, "Advances."
178 Lunau, "How Marriage Can Save Your Life."

BIG DEAL. WHO CARES?

A GROWING PORTION OF THE CANADIAN POPULATION IS SINGLE, DIVORCED, SEPARATED OR WIDOWED.

IF WE FAIL TO RECOGNIZE THE HEALTH BENEFITS OF MARRIAGE, WE FAIL TO OFFER THE APPROPRIATE LEVEL OF CARE FOR THOSE WHO ARE NOT MARRIED.

WE MIGHT ALSO FAIL TO OFFER APPROPRIATE SOCIAL SUPPORTS TO THOSE WHO NEED HELP IN THEIR MARRIAGE.

Cancer, heart disease, and stroke are the top three causes of premature death in Canada according to the latest information available.[179] Together, they account for more than one-half (55 percent) of all premature deaths in Canada.[180]

This amounts to a tremendous personal and financial burden to Canadians, their families, and our public health-care system. It is estimated that cancer alone cost the Canadian economy $22.5 billion in 2009[181] (the last year for which data is available) and that it costs an average of almost $81,000 to treat a cancer patient in Canada.[182] Similarly, statistics from the Heart and Stroke Foundation of Canada reveal that the combination of heart disease and stroke cost Canadians $20.9 billion in 2011.[183] Conservatively speaking, since these numbers are at least five years old, that is a cumulative cost of at least $43 billion for these three diseases only.

There are no studies available that state the degree to which marriage might prevent cancer or heart disease. However, we can presume that there is at least some degree of prevention since the research shows that married couples have better health in general.

But there is evidence in the published literature to show that marriage has a profound impact on outcomes and survival of both cancer and heart disease. In fact, one large study determined that for five cancer types, "the benefits of marriage are comparable to, or greater than, anticancer treatment with chemotherapy."[184] Marriage was determined to be the factor that reduced the risk of death in these five cancers by 12–33 percent, depending on the type of cancer.[185]

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179 Statistics Canada, "Leading Causes of Death, by Sex (Both Sexes)," last modified December 12, 2015, http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/hlth36a-eng.htm.

180 Canadian Cancer Statistics, "Special Topic: Predictions of the Future Burden of Cancer in Canada," Canadian Cancer Society, Statistics Canada, Provincial/Territorial Cancer Registries, Public Health Agency of Canada, 2015, https://www.cancer.ca/~/media/cancer.ca/CW/cancer%20information/cancer%20101/Canadian%20cancer%20statistics/Canadian-Cancer-Statistics-2015-EN.pdf.

181 Greg Thomson and Karen Greve Young, "Cancer in Canada: Framing the Crisis and Previewing the Opportunity for Donors," Charity Intelligence Canada, Toronto ON, April 2011.

182 Canadian Cancer Statistics, "Special Topic: End-of-Life Care," Canadian Cancer Society, Statistics Canada, Provincial/Territorial Cancer Registries, Public Health Agency of Canada, 2010, http://publications.gc.ca/collections/collection_2010/statcan/CS2-37-2010-eng.pdf.

183 Heart and Stroke Foundation of Canada, "Statistics," http://www.heartandstroke.com/site/c.ikIQLcMWJtE/b.3483991/k.34A8/Statistics.htm.

184 Kissane, "Chemotherapy."

185 Aizer et al., "Marital Status."

If the health benefits of marriage are this strong (even in the prevention, treatment, and survival of just these three major illnesses), then the marriage advantage should warrant at least some consideration as a major public health issue. Resultant changes in public policy and medical protocols could dramatically reduce the use of scarce health-care resources, and the impact on our economy and health-care system would be enormous.

B. FOR UNMARRIED PEOPLE

The data showing the impact of marriage on cardiovascular disease, cardiac surgery, mental health, and a variety of physical-health ailments may not be as dramatic, but it is exceptionally strong. Multiple researchers have suggested that the marriage benefits are primarily mediated by the enhanced social and emotional support that is available to married couples.[186]

If the health benefits of marriage are this strong then the marriage advantage should warrant at least some consideration as a major public health issue.

According to Elizabeth Nichols, a radiation oncologist at the University of Maryland Medical Center, "Better supportive care and support mechanisms for cancer patients can have a greater impact on increasing survival than many new cancer techniques. Not only do we need to continue to focus on finding new drugs and cancer therapies, but also on ways to better support our cancer patients."[187]

Similarly, Aizer has been quoted as saying, "Social support from spouses is what's driving the striking improvement in survival."[188]

Social, emotional, and practical support are significant means by which marriage offers an advantage in overcoming illness, and there is plenty of evidence to demonstrate the value in having someone present for encouragement, support, and to walk alongside them on their journey. On a more practical level, support is also needed to assist in keeping appointments and providing reminders for taking pills or attending to other treatment regimes. Yet this critical support is often missing in those who are single, widowed, divorced, or separated.

Since social support is so critical, Aizer and company suggest that "targeted social interventions" may be one means of improving the survival rates of unmarried patients; it could prove to be a cost-effective means of improving cancer outcomes for Canadians. These researchers report that by targeting vulnerable patient populations with social and emotional supports, health-care systems could reduce survival differences between married and unmarried groups and "could significantly improve the likelihood of achieving a cure."

Although the data make it clear that unmarried adults are a population at an increased risk for mental and physical health problems, the interpretation of the data makes it clear that they do not need to be.

186 Aizer et al., "Marital Status"; Alviar et al., "Association of Marital Status"; Nichols et al., "Marital Status."
187 University of Maryland Medical Center Press Release, "Married Lung Cancer Patients."
188 Walton, "Why Does Marriage."

C. FOR PHYSICIANS

Doctors should be knowledgeable about the marriage advantage and its implications for the care of their married and unmarried patients. Appointment protocols should ensure that physicians pay greater attention to the symptoms of unmarried individuals and perhaps even consider those symptoms within the framework of a particular patient's social support situation. By understanding the importance of social support in illness and taking the time to evaluate their medical issues in a more holistic fashion, doctors may have better outcomes with unmarried patients.

Taking such an inventory not only benefits the treatment of unmarried groups but could also be an important assessment to make in the treatment of a married person. That is, taking the time to make inquiries about their degree of social integration and determining how healthy their marriage is could be beneficial when facing chronic or critical illnesses.

D. FOR GOVERNMENTS, CHURCHES AND COMMUNITIES

Each of these institutions can play key roles in improving health outcomes in certain populations. There is a host of biological factors influencing disease, but the data in this report also suggest that social support is key in managing and overcoming disease. It could be cost-effective for governments to fund support groups for individuals who live alone or do not have a broad network of support. Similarly, churches and community groups could be instrumental in organizing practical and emotional support services for the sick.

Navigating Canada's public health-care system can be overwhelming for those who are ill, alone, and not accustomed to using health-care facilities. Once again, governments, churches, and communities could provide patient advocates who will work with those who are sick and assist them in getting appointments and referrals, moving up dates for tests, and pushing for the very best care and treatment options.

There is also an opportunity for these groups to provide supportive policies, services, education, and resources that strengthen marriage relationships. Proactive teaching should be available to inform couples about the marriage advantage, the need for a quality, happy marriage to access its benefits, and the significance of appropriate communication while fighting.

Given that governments are already overwhelmed and underequipped to provide timely health-care options, it will most likely be up to churches and community groups to take steps to maintain and improve marriages, and to provide appropriate social support to those who most need it.

VIII. CONCLUSIONS

Close relationships may be good for people's . . . health, but these relationships do not exist in a vacuum and supportive polices and services are needed to ensure that strong and health-promoting relationships will form and be sustained for many years.

— Paul Amato, professor emeritus, sociology, Pennsylvania State University[189]

This report has provided evidence to show the array of health benefits that are available to married couples through the marriage advantage.

This proven phenomenon has the power to keep couples healthy and happy. It enhances healing, reduces the risk of depression, promotes greater overall health, shortens hospital stays, and produces better outcomes from serious illnesses. Most astoundingly, research has shown that marriage is as potent a healer as chemotherapy in the treatment of at least five different types of cancer.

If marriage was a pill, we would be clamouring for it.

Sadly, it is not that simple. Despite its far-reaching implications for marriages, families, and our society, few Canadians know about the marriage advantage. Governments, community leaders, families, and health-care providers all need to fully understand the relationship between marital status and illness in an effort to develop appropriate strategies that will improve health care and health outcomes for both married and unmarried people.

Consequently, there is a need to disseminate this information to a broad audience and to promote public discussions about how we can use this research to do the following things:

- Maximize the life potential of every Canadian—married or not.
- Provide effective emotional and practical support to those who are ill.
- Develop medical protocols that ensure physicians understand their patients' social needs and can suggest steps to mitigate the physical harm posed by social isolation, divorce, separation, or suffering the loss of a spouse.
- Develop appropriate strategies to improve health outcomes for all Canadians.
- Reduce health-care costs by providing appropriate support mechanisms for those in need.

We have always known that marriage can have a transformative effect on those who choose to marry. Surprisingly, perhaps, we now know that marriage can have a transformative and highly beneficial effect on all members of society and even on various government systems (social services and health care). The potential to live better, healthier, and happier lives exists, but change can only happen if we come to understand and utilize the power that lies in the marriage advantage.

It is time for Canadians to change the public conversation about marriage. We need to move beyond chatter about demographics and into meaningful conversations about the science presented herein. Only then can we determine how we can utilize these findings to benefit our society, to maximize the health of individuals, to reduce health-care and social-services costs, and, finally, to create a more stable, healthy, happy society.

189 Amato, "Marriage, Cohabitation and Mental Health."

IT'S TIME TO CHANGE THE PUBLIC CONVERSATION ABOUT MARRIAGE

HOW WE CONSIDER MARRIAGE HAS BROAD IMPLICATIONS FOR PUBLIC HEALTH, FOR DOCTORS AND NURSES, FOR COUNSELLORS AND THERAPISTS AND FOR YOU.

HOW CAN WE MAXIMIZE THE LIFE POTENTIAL OF EVERY CANADIAN, MARRIED OR NOT?

APPENDIX A

NON-MARITAL COHABITATION

Non-marital cohabitation is often considered to be similar to, or even the equivalent of, marriage. After all, it provides couples with intimacy, companionship, social support, a shared home, and, for some, financial benefits from economies of scale. So the outward appearance is the same. But research and statistics suggest that cohabitation generally fails to provide the same benefits and protections as marriage.

The prevailing consensus among researchers is that cohabiting with a partner may provide some health benefits compared to being single, but the benefits are not as great as those associated with marriage.

Theodore Robles is a psychologist at the University of California, Los Angeles. In 2014, he and his colleagues published the first meta-analysis of research on the association between marital quality and health outcomes.[190] They analyzed the data of 126 published articles and concluded the following with regard to cohabitation: "Research on cohabitation is associated with greater advantage for well-being relative to being non-partnered, but fewer economic, psychological and health benefits relative to being married. . . . Moreover, data on the link between relationship quality and health outcomes . . . and whether it differs between married and cohabiting individuals is lacking."

Paul Amato found that married and cohabiting couples received similar benefits in terms of mental health;[191] however, he quickly provided a caution to those who might assume that

190 Robles et al., "Marital Quality and Health."
191 Amato, "Marriage, Cohabitation and Mental Health."

cohabitation and marriage are "interchangeable" by urging them to "consider the fact that cohabitations are less stable than marriages." He stated that in the United States, "most cohabiting unions either transition to marriage or break up within two years. Cohabiting relationships tend to be less stable than marriages in most other Western countries as well, including the Scandinavian countries and Australia. For most people, marriage is the arrangement of choice for long-term relationships."

Almost twenty years ago, researchers conducted the first systemic analysis that compared the happiness of married and cohabiting couples and demonstrated that marriage provides more protection against unhappiness than cohabitation.[192]

They compared marital status and happiness in people from seventeen different nations around the world and found that marriage increases happiness substantially more (3.4 times more) than cohabitation. However, as suggested by other research, cohabiters appear to experience a higher level of happiness than single people.

A 2004 report for the US Department of Health and Human Services included cohabiters in a study on health and marital status.[193]

Using data based on national health interviews, Charlotte Schoenborn showed that married adults were healthier than those in other marital-status groups and were the least likely to experience health problems and engage in risky behaviours. In contrast, adults living with a partner had higher rates of negative health indicators than married adults: They were more likely to be in fair or poor health, to have some type of limitation of activity due to health reasons, to have experienced low back pain and headaches in the past three months, and to have experienced serious psychological distress in the past thirty days.

The report showed that men living with a partner still had a tendency to participate in lifestyle behaviours that elevated their risk of mortality and morbidity. For example, smoking rates of male cohabiters were almost twice as high as those of married men. Their rates of heavy drinking were also twice that of married men and were equivalent to men who were widowed, divorced, or separated. Women living with a partner also had "markedly higher prevalence of heavier drinking" compared to women in all other marital status groups.

In 2012, sociology professors Hui Liu from Michigan State University and Corrine Reczek from the University of Cincinnati studied the national health survey data of nearly 200,000 people.[194] They found that married couples live longer and better adapt to health setbacks than their single counterparts. The mortality risk for cohabiters was less than that of singles, but still higher than that of married couples. According to according to Lui, "Many assume marriage and cohabitation are wholly the same, but our research showed that cohabitation generally led to a shorter lifespan."

A 2005 Canadian report evaluated and compared cohabitation and marriage.[195] It did not make comparisons based on mental and physical health parameters, but it did provide information that clearly indicates the deficits of cohabitation. The report concluded the following:

192 Stack and Eshleman, "Marital Status."
193 Schoenborn, "Marital Status and Health."
194 Hui Liu and Corinne Reczek, "Cohabitation and U.S. Adult Mortality: An Examination by Gender and Race," *Journal of Marriage and Family* 74 (2012): 794–811.
195 Ambert, "Cohabitation and Marriage."

- Marriage and cohabitation are not equivalent choices, stating, “The research literature does not support this view at this point.”
- Cohabiters are more likely to get divorced once they do marry.
- Cohabitation is a less stable union than marriage; more than 50 percent of all unions end with in five years.
- Cohabiters are less faithful to their partners.
- Cohabiting men are less committed to their relationships than married men.

Growing numbers of Canadians are choosing to live together instead of marry; this is critical demographic information for our society to explore with regard to the marriage advantage. Yet non-marital cohabitation remains a relatively new societal concept when it comes to sociological and medical research. For that reason, there is a dearth of research that relates the health benefits (or deficits) associated with marriage to cohabitation.

Further research is required to determine if the trend to cohabitate has resulted in increased costs to our health-care system and/or greater mortality and morbidity for the growing number of Canadians who are choosing to live with a partner outside of marriage.

APPENDIX B

SAME-SEX MARRIAGE

It is impossible to claim that the marriage advantage does or does not extend its benefits to same-sex couples. Heterosexual marriage has been studied for the past 150 years, and the concepts of same-sex marriage and same-sex cohabitation are too new to have been adequately studied. There simply isn’t enough research on this topic to draw any conclusions.

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