Annex B – Methodology (United Kingdom)

This document accompanies the full report, "The Cost of the Man Box: A Study on the Economic Impacts of Harmful Masculine Stereotypes in the United Kingdom," available for download at www.promundoglobal.org/cost-of-the-man-box.

Stage 1: Risks attributable to the Man Box

We used data from the 2017 Man Box study to ascertain the proportional risk attributable to "being in the Man Box" for all six cost/consequence areas.

The first key variable in our analysis of risks attributable to the Man Box is the variable for being "in the Man Box" or "outside the Man Box." To create this variable, we calculated a composite score for each respondent's answers for the 15 Man Box rules (see Annex A). Each response was awarded from one to four points, with the most gender-inequitable answer (usually "strongly agree") receiving one point and the most gender-equitable answer (usually "strongly disagree") receiving four points. "Agree" and "disagree" responses received two or three points depending on the nature/direction of the item. We then divided this score by 15 to arrive at each individual's composite score on the same 1 to 4 scale (with higher scores reflecting more gender-equitable views). In the UK, the average composite score was 1.87 on this scale. For ease of analysis and presentation, we then coded all men with Man Box scores below this country average as "in the Man Box," and those with scores at or above the country average as "outside the Man Box." This creates two easily comparable categories that reflect the particular landscape of masculine norms in the UK.

The second set of key variables comprises the specific survey items which cover the six cost categories presented in the report, as follows:

1. **Bullying and Violence**

A respondent was coded as positive for "perpetrated bullying or violence" if they responded "infrequently," "often," or "very often" to any one or more of the following three survey items:

- "In the past month, how often have you done any of the following things: "You made jokes about someone, called someone names they did not like, for any reason?"
- "In the past month, how often have you done any of the following things: "You insulted someone, posted photos meant to embarrass someone, or made threats to someone on SMS, Facebook, Instagram, Snapchat, Twitter, or another app or website?"
- "In the past month, how often have you done any of the following things: "You physically hurt someone on purpose by pushing them down, kicking them or hitting them with a hand, clenched fist, object or weapon?"

2. **Sexual Violence**

A respondent was coded as positive for "perpetrated sexual harassment" if they responded "infrequently," "often," or "very often" to the following survey item:

- "In the past month, how often have you done any of the following things: "You made sexual comments to a woman or girl you didn't know, in a public place, like the street, your workplace, your school/university, or in an internet or social media space?"

3. **Depression**

A respondent was coded as positive for depressive symptomatology if they met the threshold for additional screening as measured by the Patient Health Questionnaire.(1) This scale is an internationally validated screening tool for depressive disorder comprising two questions. The two questions have four possible answers, which receive points as follows: Not at All (0 points), Some Days (1 point), More Than Half the Days (2 points), and Nearly Every Day (3 points). Taken together, the possible score ranges from 0 to 6. A respondent scoring 3 points or higher is recommended for additional screening. The two survey items are:

- "Over the past two weeks, how often have you been bothered by any of the following problems: Little interest or pleasure in doing things"
- "Over the past two weeks, how often have you been bothered by any of the following problems: Feeling down, depressed, or hopeless"

4. **Suicide**

A respondent was coded as positive for suicidal ideation if they responded "Some Days," "More Than Half the Days," or "Nearly Every Day" to the survey item:

- "Over the past two weeks, how often have you been bothered by any of the following problems: "Having thoughts of suicide"

5. **Binge Drinking**

A respondent was coded as positive for binge drinking if they responded "Once per month," "Once or twice per week," or "Every day or almost every day" to the survey item, "In the last year, how often did you drink so much that you got drunk?"

6. **Traffic Accidents**

A respondent was coded as positive for having a recent traffic accident if they responded "Yes, once" or "Yes, more than once" to the survey item, "In the past 12 months, have you, yourself, been in any traffic accidents?" The survey item also included the explanatory note for respondents reading, "*Please think about accidents you might have been involved with automobiles, trucks, buses, minibuses, bicycles, motorbikes, or motorcycles. The accidents might have happened while you were driving a vehicle, riding, or while you were walking."*

We estimated Population Attributable Fractions for the Man Box variable as a risk factor for each of these six outcome variables, using the *punaf* command(2) in Stata 13. We adjusted these estimates by employment condition (whether an individual was employed full time, part time, unemployed, freelance, was student or other), socioeconomic level, region of the country, and age group (18-24 years and 25-30 years old). We used analytic sample weights in our calculations.

The resulting Population Attributable Fractions (PAF) are as follows:

Outcome	**PAF**	**95% confidence interval lower limit**	**95% confidence interval upper limit**
Bullying and Violence	0.413	0.346	0.473
Sexual Violence	0.713	0.641	0.771
Depression	0.054	0.024	0.083
Suicide	0.446	0.367	0.515
Binge Drinking	0.046	-0.064	0.146
Traffic Accidents	0.589	0.460	0.687

These calculations allows us to conclude that if there were no Man Box as a risk factor, we would expect 41.3% of bullying and violence, 71.3% of sexual violence, 5.4% of depression, 44.6% of suicide, 4.6% of binge drinking, and 58.9% of traffic accidents, using the definitions above, to not occur.

Stage 2: Identifying relevant costs for men age 18-30

For the second stage, we did not use the 2017 Man Box dataset, but instead sought the most comprehensive available data sources to demonstrate the nationwide prevalence or incidence of the outcomes of interest and the associated costs. We used these figures to ascertain a total cost toll related to each outcome, as restricted to the actions/lives of men age 18-30, to the best of our ability. The data sources and cost calculations for each of the six outcomes are presented below.

1. **Bullying and Violence**

The data source for this outcome was the Crime Survey for England and Wales, 2016-2017.(3) We included the following survey items in our estimate:

- "… Has anyone, including people you know well, DELIBERATELY hit you with their fists or with a weapon of any sort or kicked you or used force or violence in any way?"

- "And (apart from anything you have already mentioned), in that time, has anyone THREATENED you in any way that actually frightened you? Please include threats

that have been made by any means, for example in person, on-line or over the telephone."

- "Apart from anything you may have already mentioned, during the last 12 months, has any member of your household (aged 16 or over) deliberately hit you with their fists or with a weapon of any sort, or kicked you, or used force or violence on you in any other way?"

The survey dataset presents the sum total of these types of events which respondents reported had been perpetrated by males in the year 2016-2017: 1,982,966.

The main data source for calculating the costs attributable to experiences of violence was the 2018 report, "The Economic and Social Costs of Crime: Second Edition," using the Quality-Adjusted Life Year (QALY) approach under heading 5.2, "Physical and emotional harms to the victim."(4) The QALY approach accounts for the negative impact on a person's quality of life from injuries and emotional impacts of being a victim of violence or crime. This cited report draws upon multiple evidence sources to produce estimates of the **QALY loss**, presented as a percentage. The percentage reflects the proportion of quality of life lost due to that harm. The report also provides the **duration** – meaning the exact number of years (or proportions of years) – for which evidence demonstrates that this quality of life loss will last. Data calculated for this report also show that not every victim experiences each harm, or at the same level, so it also produces a **prevalence** for this harm. As a shorthand example to explain these three concepts: perhaps a broken arm would produce a 10% loss of quality of life (QALY loss) the six months that it takes to fully heal (0.5 year duration) for 40% of people who suffer a broken arm on average (prevalence).

In our judgment, the category of violence available within this data source that most closely matched the bullying and violence variables we were applying from other sources was the category, "violence without injury." So we have used the QALY loss, duration, and prevalence estimates for this category.

These numbers can be translated to a cost estimate when we multiply them by the economic value of a statistical life-year. For the UK, we used a value of a statistical life (VSL) of approximately $3.69 million dollars. To estimate this figure, we adopted the method proposed by the Organisation for Economic Co-operation and Development (OECD).(5) In this method, the OECD has estimated a VSL for all the OECD countries through a systematic review. This estimate can be adjusted for any specific country, according to the following equation:

$$\boldsymbol{VSL_{UK}^{t} = VSL_{OECD}^{t} * \frac{Y_{UK}^{t}}{Y_{OECD}^{t}}^{\beta}}$$

Where VSL_{OECD} is the estimated VSL for the OECD countries of 3.63 million USD in 2016 (inflation adjusted from a 3 USD million estimate in 2005), t is the year of interest, Y is the GDP per capita and β is the income-elasticity of 0.8 used for high-income countries.

Indicators of GDP per capita in the OECD and in the UK come from the World Bank.(6) The VSL can be understood under the Willingness to Pay approach, which is a way to measure society's valuation of a life of any individual. However, this amount reflects the value of an entire life. To adjust this figure to the remaining life expectancy, we conducted a calculation to determine the average remaining life expectancy. The average remaining life expectancy for all age groups is 42.11 years.(7) Therefore, we conclude that the value of a statistical life-year for use in this calculation in the UK is ~$3.69 million divided by 42.11 years, for an exact figure of $87,554.9.

Combining QALY loss, QALY loss duration, and the value of a statistical life year, we reach the following calculations for the known emotional outcomes of being a victim of violence without injury:(4)

Emotional harm of being a victim of violence without injury	Prevalence	QALY loss	Duration	Value of a statistical life year as explained above	Cost of harm per case of violence
Fear	23%	3%	1.25 years	$87,554.9	$689.5
Depression	8%	14.5%	1 year	$87,554.9	$1015.6
Panic/anxiety attacks	13%	13.3%	3 years	$87,554.9	$4541.5
Total					$6246.6

If the known emotional harms for each case of violence, using the QALY approach above, is $6246.60, then one can multiply this cost by above-cited 1,982,966 acts of violence perpetrated by men in 2016, to produce a total figure of $12.39 billion. At this stage we sought to adjust this total due to the fact that we were not able to determine the precise ages of the perpetrators within the source data. However, in aggregate terms, within the Crime Survey for England and Wales(3), we know that 74% of violent incidents were perpetrated by individuals 16-39, and that 76% of these incidents are perpetrated males. Therefore we assumed that 56.24 % (0.74 x 0.76) of violent incidents were perpetrated by males age 16-39. Using this percentage, we reduced the total figure to $6.96 billion. Multiplying this figure by the PAF of 41.3% results in $2.877 billion as our minimum estimated cost of the Man Box with regard to bullying and violence.

Discussion and known limitations: The age range of 16-39 is the closest age range to our target of 18-30 that we were able to ascertain within available sources, applying an additional adjustment in this case due to limitations in publicly available crime victimization data. Even accounting for these limitations, we felt that this was the most comprehensive, accurate, nationally representative survey to ascertain the incidence of these forms of violence in the UK in 2016. This cost estimate likely significantly underrepresents the true cost toll of these acts, because data sources are not available to measure additional cost areas such as: costs in anticipation of crime, direct costs of medical or psychological treatment, costs of material damages, lost productivity by absenteeism (including due to premature mortality), lost productivity due to presenteeism, or costs in response to crime (such as police or criminal legal system costs).

2. Sexual Violence

The data source for this outcome was also the Crime Survey for England and Wales, 2016-2017.(3) We included the following survey item in our estimate:

- "During the last 12 months, have you been sexually interfered with, assaulted or attacked, either by someone you know or by a stranger?"

These multiple options are presented as one question to respondents; it is not possible to separate subcategories for the various types of perpetrators mentioned within the question. The survey dataset presents the sum total of these types of events, which respondents reported had been perpetrated by males: 118,356.

In order to calculate the costs caused by this type of events, we also followed the same methods suggested for the bullying and violence items, explained above.(4) The QALY approach accounts for the negative impact on a person's quality of life from injuries and emotional impacts of being a victim of violence or crime.

In our judgment, the category of violence available within this data source that most closely matched the sexual violence variables we were applying from other sources was the category, "semi-violent crime." So we have used the QALY loss, duration, and prevalence estimates for this category, which the report clarifies is meant to include "other sexual offences". These numbers can be translated to a cost estimate when we multiply them by the economic value of a statistical life-year, estimated in $87,554.90, as detailed above.

Combining QALY loss, QALY loss duration, and the value of a statistical life year, we reach the following calculations for the known emotional outcomes of being a victim of violence without injury:(4)

Emotional harm of being a victim of "semi-violent crimes"	Prevalence	QALY loss	Duration	Value of a statistical life year as explained above	Cost of harm per case of violence
Fear	23%	3%	1.25 years	$87,554.9	$755.2
Depression	8%	14.5%	0.5835 years	$87,554.9	$592.6
Panic/anxiety attacks	18%	13.3%	1.5835 years	$87,554.9	$3319.1
Total					$4666.9

If the known cost of emotional harms for each case of violence, using the QALY approach above, is $4,666.90, then one can multiply this cost by above-cited 118,356 acts of violence perpetrated by men, to produce a total figure of $552.4 million. At this stage we sought to adjust this total due to the fact that we were not able to determine the precise ages of the perpetrators within the source data. However, in aggregate terms, within the Crime Survey for England and Wales(3), we know that 74% of violent incidents were perpetrated by individuals 16-39, and that 76% of these incidents are perpetrated males. Therefore we assumed that 56.24 % (0.74 x 0.76) of violent incidents were perpetrated by males age 16-

39. Using this percentage, we reduced the total figure to $310.6 million. Multiplying this figure by the PAF of 71.3% results in $221.5 million as our minimum estimated cost of the Man Box with regard to bullying and violence.

Discussion and known limitations: The age range of 16-39 is the closest age range to our target of 18-30 that we were able to ascertain within available sources, applying an additional adjustment in this case due to limitations in publicly available crime victimization data. The question refers only to a certain range of acts of sexual violence, and the phrasing of the question may mean that some respondents do not disclose some experiences of sexual violence. This cost estimate likely significantly underrepresents the true cost toll of these acts, not only because the prevalence figure is likely underreported, but also because data sources are not available to measure additional cost areas such as: costs in anticipation of crime, direct costs of medical or psychological treatment, costs of material damages, lost productivity by absenteeism (including due to premature mortality), lost productivity due to presenteeism, or costs in response to crime (such as police or criminal legal system costs).

3. Depression

The calculations for depression relied on multiple data sources. By using the Adult Psychiatric Morbidity Survey 2007(8) and the population of the United Kingdom for 2016,(9) we estimated that 176,920 of men age 18-30 experienced depression (representing 3.1% of the population within this age range).

Starting from this number, we then calculated the dollar value of productivity lost by presenteeism among this population. Presenteeism occurs when the productive capabilities of a person are undermined because of a disease or condition, despite the person is able to go to work. Using the Annual Survey of Hours and Earnings(10) we estimate the cumulative annual productivity of this proportion of males aged 18-30 to be $184,711,000,000, adjusted for Purchasing Power Parity.(11) Applying presenteeism factors as reported by Goetzel,(12) and prevalence of depression, we estimate the value of productivity lost due to presenteeism related to depression among males age 18-30 to be $876,100,000. Multiplying this figure by the PAF of 5.4% results in $47.3 million as our minimum estimated cost of the Man Box with regard to depression.

Discussion and known limitations: This cost estimate likely significantly underrepresents the true cost toll of depression because data sources are not available to measure additional cost areas such as: direct costs of medical or psychological treatment, lost productivity by absenteeism, or cost estimates for the moral harm associated with this mental health challenge. In addition, it is possible that the PAF that we estimated is also underestimated because of rigid masculinities, *i.e.* that because of the pillars of self-sufficiency and toughness, men in the Man Box likely do not declare to be depressed.

4. Suicide

The calculations for suicides attributable to harmful masculinities relied on two data sources. We estimated the number of suicides among men age 18-30 in 2016 to be 560, drawing from mortality data from the Office for National Statistics(13) and taking into account the following International Classification of Diseases 10th version (ICD-10) codes: X60-X84, which are all related to self-inflicted death. Since the source of data did not allow to gather information by specific age, rather by age group, for every age group we calculated the proportion of persons in our age group of interest from population data.(9) To estimate the value of lost productivity from years lost due to premature death, we followed the human capital approach(14) and used the hourly wage from the Annual Survey of Hours and Earnings(10) For every particular age of death from the mortality data, we estimated the productivity loss as the sum of current and future expected productivities obtained from the Annual Survey of Hours and Earnings by age discounted at a 3% annual rate, in order to calculate present values of future monetary figures, up to the expected age at death. We assumed that there are 240 working days with 8 hours each in order to calculate the annual productivity. We calculated the sum of lost productivities for all self-inflicted deaths, defined above.

We estimate the value of productivity lost due to premature death from suicide among males age 18-30 to be $703.1 million. Multiplying this figure by the PAF of 44.6% results in $313.6 million as our minimum estimated cost of the Man Box with regard to suicide.

Discussion and known limitations: This cost estimate likely significantly underrepresents the true cost toll of suicides because data sources are not available to measure additional cost areas such as: direct costs of medical or psychological treatment, funeral and legal expenses, or moral harm associated with having a close friend, colleague, or family member commit suicide.

5. Binge Drinking

We relied on microdata from the Adult Psychiatric Morbidity Survey 2007(8) to estimate the prevalence of binge drinking, defined as having 5 or more drinks on the same occasion in the past year. We estimated that the prevalence of binge drinking was 87.2%. By using the same Survey, we estimated that on average 3.04 of working days are lost every year because of being drunks or with hangover,(8) which represents 1.3%. We calculated, as above, that the annual productivity among the 18-30 years old males was $184,711,000,000. Therefore, to calculate the annual productivity lost by binge drinking attributable to the Man Box, we multiplied the prevalence of binge drinking by the percent of working days lost by being drunk or with hangover (1.3%) by the annual productivity and by the Population Attributable Fraction of 4.6% by the prevalence of binge drinking once a year. This multiplication yields to a figure of $96,800,000 attributable to the Man Box.

Discussion and known limitations: This cost estimate likely significantly underrepresents the true cost toll of binge drinking because data sources are not available to measure

additional cost areas such as: direct costs of medical treatment, funeral and legal expenses, and costs of accidents specifically caused by being drunk.

6. Traffic Accidents

The data source for the cost consequences of traffic accidents was the mortality data from the Office for National Statistics(13) and the road safety data from the Department for Transport.(15) We have combined two calculations: costs due to lost productivity from premature death and average costs per event for all traffic accidents in which men age 18-30 were responsible.

To estimate the value of lost productivity from years lost due to these premature deaths, we followed the same steps as for suicide. First, we identified that 263 males age 18-30 died in traffic accidents in 2016. ICD-10 codes included in this category are: V02-V05, V09, V12-V15, V17-V19, V20-V79, V80.3-V80.6, V01, V10-V11, V80.2, V82.8, V88.9, V87.9, which are all related to traffic accidents.

For every particular age, we estimated the productivity loss as the sum of future expected productivities obtained from the Annual Survey of Hours and Earnings(10) by age discounted at a 3% annual rate, in order to calculate present values of future monetary figures, up to the expected age at death. We performed this for the deaths registered at the mortality data and calculated the sum of lost productivities for all deaths caused by traffic accidents and came to a figure of $330.2 million. The proportion of this attributable to the Man Box is $194.5 million, applying the Population Attributable Fraction of 58.9% that we estimated previously.

In addition, the Road Safety Data(15) show that in 2016, there were 63,950 crash incidents in which men age 18-30 were responsible. We assumed that the average cost per event was $2,771.(16) The total costs for these traffic accidents was $177,176,000, and the costs attributable to the Man Box are $73 million, after applying the Population Attributable Fraction of 58.9%. $194.5 million plus $73 million results in $267.5 million.

Discussion and known limitation: This cost estimate likely underrepresents the true cost toll of traffic accidents because data sources are not available to measure additional cost areas such as: direct costs of legal services, and lost productivity by presenteeism and absenteeism. For this outcome, the PAF that we estimated is high, and this can be caused by the fact that the incidence of traffic accidents in the UK is one of the lowest in the world, and therefore other reasons than infrastructure could lead to traffic accidents.

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