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Fear and the Response to Terrorism: An Economic Analysis

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Abstract

This paper offers a rational approach to the economics and psychology of fear and provides empirical evidence that supports our theory. We explicitly consider both the impact of danger on emotions and the distortive effect of fear on subjective beliefs and individual choices. Yet, we also acknowledge individuals' capacity to manage their emotions. Though costly, people can learn to control their fear and economic incentives affect the degree to which they do so. Since it does not pay back the same returns to everyone, people will differ in their reaction to impending danger. We then empirically examine the response of Israelis to terror incidents during the "Al-Aqsa" Intifada. Consistent with our theory, the overall impact of attacks on the usage of goods and services subject to terror attacks (e.g. bus services, coffee shops) reflects solely the reactions of occasional users. We find no impact of terrorist attacks on the demand for these goods and services by frequent users. Education and the exposure to media coverage also matters. We find a large impact of suicide attacks during regular media coverage days, and almost no impact of suicide attacks when they are followed by either a holiday or a weekend, especially among the less educated families and among occasional users.

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1 Introduction

Terrorism triggers fear. Although "premeditated, politically motivated violence perpetrated against noncombatant targets by sub-national groups or clandestine agents, usually intended to influence an audience" (US State Department definition; 1983) is not a new phenomenon, the tragic events of September 11, 2001 illustrate the global reach of terrorism and the lasting ramifications of the fear generated by terrorist acts on human behavior. It is thus not surprising that understanding the causes and consequences of terrorism is a challenge economists find hard to resist. Much attention has been focused on understanding why young and educated people are willing to commit suicide in order to kill others (Krueger and Malečkova 2003; Benmelech and Berrebi 2007; Berman 2009) and evaluating the causal effect of terror on aggregate economic and political outcomes (Abadie, 2003; Eckstein and Tsiddon, 2004; Enders and Sandler, 2006; Krueger, 2007; Jaeger and Paserman 2008; Gould and Klor, 2010; Pape 2003, 2005).

Although the likelihood of being harmed by terrorism is negligible, the fear created by terrorism has huge and enduring effects on human behavior. Beyond the direct losses from terrorist acts, the resultant "terror" - the intense and prolonged fear of imagined dangers - has other long-term repercussions, such as the costs of increased security measures and changes in individual choices.[1] For instance, the use of air transportation in the U.S. dropped by approximately 15 percentage points following September 11th and tourism to Israel shrank by approximately two-thirds during the "Al-Aqsa" intifada (Figure 1 and Figure 2 respectively).[2],[3]

Since neither the standard expected utility model nor its state-dependent version explains why negligible changes in the probability of being harmed have such sub-

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[1] Abadie and Gardeazabal (2003) find that GDP per capita in the Basque Country declined about 10 percentage points following the outbreak of separatist attacks.

[2] It is worth noticing that the number of Israeli casualties due to terror attacks was always below the number of Israeli casualties by car accidents (Figure 3).

[3] Another prominent example of how unlikely—but ominous—events can trigger fear and have a huge and lasting impact on behavior involves the "mad cow" disease. Consumption of beef in the UK shrank by approximately one quarter (Adda, 2007), though from 1995 to 2002, a total of 133 human cases of mad cow disease were reported in the United Kingdom, six cases in France, and one case each in Ireland, Italy, and the United States. For further details see: http://www.cdc.gov/ncidod/diseases/cjd/bse_cjd.htm

stantial effects on individual choices,[4] researchers have naturally focused on behavioral explanations, including bounded rationality, to account for the seemingly disproportionate response of people to terrorist acts. In particular, terrorism can trigger the powerful emotion of fear, where fear is defined as the degree to which subjective beliefs about danger deviate from objective assessments of risk. In this way, the distortive effects of fear on human behavior can help in explaining people's "irrational" response to terrorism (Kahneman and Tversky, 1973, 1979; Tversky and Kahneman, 1974).[5]

We offer a broader approach to the economics and psychology of fear to account for the reactions of people to terrorist acts. We neglect neither the impact of imagined danger on emotions nor the distortive impact of fear on subjective beliefs and individual choices. Indeed, our starting point is that people are human: emotions shape beliefs and behavior, so that subjective and objective beliefs can diverge with concomitant effects on individual decisions. But, we also acknowledge that individuals adjust. Though costly and imperfect, people can learn to control their emotions when it is in their long-run interests. Most importantly and unique to this paper, we argue that the willingness to control one's emotions depends on the economic costs and benefits associated with acquiring this self-control. Even in a world with emotionally motivated individuals, economic incentives shape the degree to which emotions distort choices. When there are powerful economic incentives associated with learning to control one's emotions, these will push a person's subjective beliefs about danger closer to the objective risks of those dangers, with corresponding effects on the person's decisions.

People can learn to control their emotions, and economic incentives affect the degree to which individuals do so. As noted by Socrates, "young men may attain this quality [the ability to control emotions, including fear] by the help of study and pursuits."[6] A large body of evidence in the psychology literature suggests that the capacity to control fear is gained through training, past experience, and other forms of investment in this particular type of human capital.[7] Since building one's capacity to deal with fear is costly and does not pay back the same returns to everyone, people will differ in how much they invest in controlling fear. For example, frequent users of bus or

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[4]Numerous studies demonstrate the people frequently overestimate low-probability events and underestimate high-probability events. See Fischhoff et al. (1981), Viscusi (1985) and Viscusi and Magat (1987).

[5]As pointed out by Viscusi (1985), this tendency is also consistent with rational Bayesian learning processes in which one revises prior beliefs toward the truth.

[6]"Laches." The Dialogues of Plato. Vol. 1. Trans. B. Jowett. Oxford: Oxford University Press, 1993.

[7]Macmillan and Rachman (1987), in a study on parachute training, found that recruits reported significant decreases in fearfulness as they passed through the training program.

airline services, which are subject to terrorist attacks, receive greater benefits from overcoming fear than occasional users. The cost of overcoming fear, however, has a powerful fixed cost component: the cost of eliminating the "terror" of the first bus or airline ride goes a long way toward reducing the fear of future bus rides. Therefore, we expect that frequent users will invest in controlling fear and keep their consumption closely aligned with the objective dangers, while occasional users will substitute out of the "terror infected good," consistent with their fear-induced subjective assessment of risk. Hence, there is an "optimal" level of fear that is endogenously determined by the costs and benefits of controlling one's emotions.

Our model is related to the growing literature on "anticipatory feelings" in which agents intentionally distort their beliefs because they derive an intrinsic benefit (or cost) from expecting a good (or bad) outcome. Akerlof and Dickens (1982) were the first to use this model in addressing the question of why individuals in high-risk occupations fail to adhere to safety regulations or purchase adequate insurance. Caplin and Leahy (2001, 2004) enriched the standard model of expected utility to include the individual's posterior beliefs in the description of a consequence. They use this model to show that a physician may have an incentive not to pass precise information to his patient.[8] Brunnermeier and Parker (2005) develop a dynamic model in which an agent chooses an optimal distortion of his beliefs taking into account the intrinsic benefit from anticipatory feelings and the cost of adopting suboptimal behavior.

Unlike this literature, we recognize both that fear is a natural, human reaction to terrorism that causes subjective and objective beliefs to diverge and that individuals can learn to limit the intense motion of fear on their beliefs and decisions. People can invest in controlling their fears, bringing their subjective beliefs closer to objective probabilities.[9]

Our theory is also related to - but distinct from - Caplin (2003), which studies how "fear" can be used as a policy intervention to affect behavior. Similar to Caplin (2003), we recognize that "fears of the bad state" might deviate from objective danger, and that this deviation can be amplified by news advertising the consequences of the threat. And, like Caplin (2003), we allow people to take costly actions that can lower their "fear of the bad state." However, our model is distinct from Caplin (2003) in

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[8]See also Koszegi (2006).

[9]In contrast, there are no testable implications (with observable data) for a model in which the agent can effortlessly choose his beliefs. Moreover, as Eliaz and Spiegler (2006) show, even when the agent can only affect his beliefs indirectly through his choice of information, one cannot rationalize anomalous choices of information with a model of anticipatory feelings (assuming the agent is Bayesian and maximizes expected utility).

a fundamental manner. In Caplin (2003), the only way people can lower their fears is by reducing the objective probability of danger. In our model, people can take costly actions to control their fears and decrease the deviation between subjective and objective beliefs even if they cannot take measures to reduce objective danger. Hence, when people devote enough effort to controlling their fears, subjective beliefs converge toward objective risks, reducing the overreaction of individuals. To the best of our knowledge, we are the first to model "fear", and an agent's ability to control fear, in this way.

To assess the role of economic incentives in shaping people's decisions to overcome the fear triggered by terrorist acts, we study the reaction of Israelis to terror incidents during the "Al Aqsa" Intifada. Specifically, we differentiate between the reactions of individuals that are frequent users of goods and services that are subject to terrorist attacks from individuals that are only occasional users. We estimate the impact of both bus-related suicide attacks on the usage of public bus services and café-related terrorist incident on visits to cafés, while differentiating among different types of users. We utilize micro data taken from the Israeli CBS Expenditures and Income Surveys, and data on terror attacks against Israeli targets. We construct a repeated cross-sectional of the daily usage of goods and services subject to terror attacks, using a representative sample of Israeli households that are surveyed daily for fourteen-day periods.

Public bus routes were targets of the suicide attacks during the "Al Aqsa" Intifada that caused the highest rates of fatal casualties (data appendix tables 1 and 2 respectively). The Israeli bus companies offer three major types of tickets: standard single-ride tickets, multiple-ride tickets and monthly passes. Naturally multiple-ride tickets and monthly passes tickets are attractive to frequent users. We evaluate the differential impact of suicide attacks on frequent users and occasional users.

Consistent with the theory, frequent users of buses respond much less than occasional users to terrorist attacks on buses. Although bus-related attacks have a non-negligible impact on the number of bus tickets purchased, the overall effect reflects solely the impact of bus-related attacks on occasional users. We find no impact of bus-related attacks on the purchase of either multiple-ride tickets or monthly passes. This is not simply because frequent users are naturally more inelastic users. Indeed, we show that the demand for monthly passes and multiple-ride tickets is more sensitive to prices than the demand for single-ride tickets.

Yet, there is a potentially confounding issue. While the purchase of a single-ride bus

ticket is a good proxy for usage, the timing is less clear for multiple-ride and monthly passes. Therefore, we next focus on single-ride ticket purchasers and distinguish among frequent and occasional riders. First, even among single-ride ticket purchases, we divide the sample into high and low frequency riders by using reports prior to suicide attacks. We find that, while bus-related suicide attacks reduced the number of single-ride tickets of low-frequency users, they had no effect on frequent users. Second, we differentiate between car owners and others. While we find large effects on car owners, we find little impact on others.[10] This result holds despite the finding that car owners are less responsive to prices.

Since buses might be viewed as a necessary mode of transportation for frequent users, we also examine how terrorist incidents affect café visits. Coffee shops, restaurants and pubs were also popular targets for suicide attacks. Consumption of these services varies by age, income, and, especially, marital status. Most social and dating activities take place in such "public locations". By disaggregating the population of young Israeli adults into singles and married couples without children we find that, while a suicide attack reduces the number of visits of married couples by approximately 15 percentage points during the first week, it has no impact on the number of visits or spending habits of singles. Clearly, terror has a differential impact.

Thus far, the results are fully consistent with the view that economic incentives shape people's decisions to overcome the fear induced by terrorist acts. Occasional users of bus services respond much more to terrorist acts than frequent users. Yet, frequent bus users have different demand for bus services from occasional users. Thus, our finding that frequent and occasional users respond differently to terrorism might reflect pre-determined demand factors rather than differential investments in overcoming fear.

To address this concern, we examine the behavior of frequent and occasional bus users in response to terrorist attacks on coffee shops, bars, and restaurants. If investment in overcoming the fear of bus attacks also reduces the fear of café-related attacks, then frequent bus users should be less affected by café-related terrorist attacks than occasional bus users. Indeed, if the relatively mild effect of terrorist incidents on frequent bus users reflects their investment in overcoming fear, then café-related terrorist incidents should also have a smaller impact on frequent bus users than on their occasional peers. By estimating the differential impact of café-related attacks on visits to cafés by frequent and occasional bus users, we condition out pre-determined demand

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[10]The large effect on irregular users cannot be explained by the demand elasticity to monetary prices. The number of single ride tickets purchased by car owners is less sensitive to prices than the number of single ride tickets purchased by their peers.

factors. Indeed, frequent and occasional bus users provide an appropriate treatment-control group setting. We find that they visit café in similar frequencies in times with no terror.

Consistent with our theory, café-related terrorist incidents dramatically reduced café visits by occasional bus users, but these terrorist incidents had almost no effect on frequent bus users. This result holds even when we divide the population into those projected to be frequent and occasional bus users using demographic characteristics, suggesting that the results do not simply reflect person-specific pre-determined attitudes toward terror.[11] These findings highlight the importance of economic incentives in shaping peoples' choices even in an environment in which emotion and fear are relevant factors.

To shed some empirical light on the underlying mechanisms, we evaluate the impact of education and media coverage on people's responses to terrorist attacks. The concept of "ability" as an important input in the capacity to adjust to changes is central both in economics and modern psychology. Extensive research in psychology and behavioral economics points to the effect of cognitive abilities on a person's deviation from the predictions of economic theory (Kahneman 2003), attributing systematic deviations from the predictions of standard decision theory to a lack of cognitive skills (Thaler 1992). An implication of these views is that individuals with greater cognitive ability are more likely to overcome fear and form subjective beliefs that are closer to objective probabilities; that is, they are less likely to "overreact".[12]

When differentiating by heads of households' education levels, we find that the less educated are more likely to overreact to terrorist acts than more educated individuals. While both the educated and the less-educated reduce the number of bus tickets purchased in the very short run, only the less-educated keep their use of bus services, as measured by single-ride tickets, at a level lower than their use prior to the suicide attack. The overall "over-reaction" to terrorism in the longer run reflects the impact

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[11]Systematic biases in risk perceptions, especially by less frequent users of the "risky infected" goods, are well documented in the literature on health behavior and risks (Viscusi, 1993). For instance, Viscusi (1990) finds that smokers and especially nonsmokers greatly overestimate the lung cancer risk of cigarettes. Recently, Shayo and Zussman (2010) found evidence that terrorism intensity judicial ingroup bias in the vicinity of the court.

[12]Hallam (1983) finds that bomb-disposal operators scored above civilian population norms on most of the psychometric tests indicating psychological well-being and healthy adjustment.

Moreover, operators who had received decorations for gallantry were found to be slightly but statistically significantly superior in psychological health and bodily fitness measurements that were collected before the operators went on a tour of operations and well before the decorations were awarded. On a scale that measures "hypochondriasis," the decorated operators returned zero scores. They had no bodily or mental complaints at all. (Hallam, 1983; Rachman, 1990).

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of suicide attacks on less educated families, reflecting a differential effect of bus-related suicide attacks on educated and less educated bus users, mainly among occasional bus users. Consistent with our theory, the less educated frequent users act as if they evaluate the risk associated with terror almost as accurately as their educated peers do.

Last but not least, we take a first glance at the role of the media. Exposure to media coverage of tragedy has been shown to generate symptoms of anxiety and distress (Slone 2000; Schlenger et al. 2002). While these empirical studies (and others) provide evidence supporting the prevailing perspective on the impact of extensive coverage on aggregate public anxiety, they fail to link the public's fear with people's choices and outcomes. We take advantage of our micro data and the natural variation in Israelis' exposure to media coverage of terrorist events during weekends, holidays and weekdays to fill this gap. Israeli newspapers are not printed on Saturday or on holidays. We compare the impact of suicide attacks that took place before the weekend or before holidays on the number of single-ride bus tickets purchased on weekdays a few days afterward to the impact of similar suicide attacks that were followed by regular weekdays' media coverage in the same time frame.

The results are striking. While we find a large impact of suicide attacks during regular media coverage days, we find almost no impact of bus-related attacks when they are followed by either a holiday or a weekend. Moreover, the large impact of suicide attacks followed by regular weekdays' media coverage is found mainly in the use of bus services by the less educated families, consistent with the view that media coverage tends to have a larger impact on the less educated and among occasional users of bus services who have weaker economic incentives to invest in overcoming fear.

The remainder of this paper is organized as follows: Section II builds a simple model that incorporates into the expected utility framework some of those situations in which the extreme consequences associated with consumption of risky goods affect persons' mental states and generate fear. We assume individuals can control their fears by investing in mental human capital. We work out a formal statement of this theory, and derive various implications. Section III provides a brief review of the econometric approach and the data we use. Section IV presents the statistical model and the identification strategy. Section V displays various stylized facts. In Sections VI, VII, and VIII, we evaluate the impact of bus and café-related attacks on frequent and occasional users. In Section IX, we further explore the underlying mechanism by evaluating the effects of education and exposure to media coverage. We conclude in

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Section X.

2 The Model

Consider an economy that consists of individuals who consume two goods: a consumption good (x) that is subject to terror attacks, and all other goods (y). Individuals live for one period. The probability of surviving to the end of the period is determined by their consumption plans. As long as they avoid consumption of x, their probability of survival equals 1. The more they consume of x, the less likely they are to survive. Terrorism generates fear, which in turns exaggerates *subjective* beliefs as to the marginal impact of consuming x on the probability of survival. People respond to fear by reducing consumption of the terror-infected good (which comes at a utility cost) or by taking costly actions to control their fear and change their subjective beliefs about the risk of consuming good x. Importantly, this investment is not a "*free-lunch*" and it does not pay the same returns to all individuals. The *optimal level of fear* experienced by each individual is endogenously determined by his cost and benefit of controlling it.

Basic setup

Individuals' expected utility, W, is:

$$W = p\left(\tau, x, F\right) V\left(x, y\right), \tag{1}$$

where p is the *subjective* probability of surviving a terrorist attack and V is the utility from consumption of x and y. The *subjective* probability is adversely affected by the degree of terrorism, τ, consumption of the good subject to terrorism x, and emotions of worry and fear F

$$p_\tau \leq 0, p_x \leq 0, p_F \leq 0.$$

Moreover an increase in fear lowers individual's subjective belief as to the marginal effect of consuming x on the probability of survival. Likewise, it is reasonable to assume that terrorism, fear, and consumption of the terrorism-related good are mutually reinforcing with respect to the marginal effects on the subjective probability of survival, so that

$$p_{xF} \leq 0, p_{x\tau} \leq 0, p_{\tau F} \leq 0.$$

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For simplicity V is assumed to be a quasi-linear function,

$$V(x, y) = au(x) + y, \tag{2}$$

where u is increasing and strictly concave. The parameter a is a shifter that changes the preference for x relative to that for other goods y. The amount of fear, F, is given by

$$F(\tau, m) = f(\tau, m)(1 - E)x, \tag{3}$$

where m represents media coverage of terror attacks and E is a binary variable that equals 1 if consumers choose to control fear and 0 otherwise. Fear rises with the degree of terrorism ($f_\tau > 0$), it is amplified by the attention drawn to the consequences of threat through propaganda or the media coverage ($f_m > 0$), and it increases linearly with the consumption of x. And, in the absence of terrorism, there is no fear $f(0, m) = 0$.

Individuals can control their fears by spending fixed amount of income (π_E), which naturally is lower for individuals who posses greater abilities (s) to assess objective risk accurately[13]. The expected utility is therefore

$$W(x) = (1 - E)W^0(x) + EW^1(x), \tag{4}$$

where $W^0(x) = p^0(x)V^0(x)$ and $W^1(x) = p^1(x)V^1(x)$ represent the expected utility for $E = 0$ and $E = 1$ respectively.[14] The budget constraint is

$$\pi_x x + y + \pi_E E = I, \tag{5}$$

where π_x is the price of x, y is the numeraire, $\pi_E E$ is spending to reduce fear and I is income.

The expected marginal utility from consumption of x is higher when investment is undertaken as consumers overcome fear and thus bring their beliefs to be as the objective probabilities.[15]

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[13]Schultz (1975) recognized the role of "ability" in agents' capacity to deal with disequilibria. Sternberg (1985) emphasizes the role of cognitive abilities in adjusting and performing within an unfamiliar environment.

[14]$W^0(x) = p(x, \tau, f(\tau, m))(au(x) + I - \pi_x x)$ and $W^1(x) = p(x, \tau)(au(x) + I - \pi_x x - \pi_E)$.

[15]since $W_x^1 - W_x^0 = V_x^0(p^1 - p^0) + (p_x^1 - p_x^0)V^0 - p_x^1\pi_E > 0$, and consumption of x is such that $V_x^0 > 0$, $(p^1 - p^0) > 0$ and $p_x^0 < p_x^1 < 0$.

$$\frac{dW^1}{dx} > \frac{dW^0}{dx}. \tag{6}$$

This implies that the optimal consumption of x when spending in reducing fear is undertaken is always larger than the optimal consumption of x without that, i.e.,

$$x^{1*} > x^{0*}, \tag{7}$$

where $x^{0,*}$ and $x^{1,*}$ represent the optimal consumption of x for $E = 0$ and $E = 1$ respectively.

To illustrate, suppose that expenditures on reducing fear were exogenous and given. Then an increase in the taste for x through an increase in a would raise the marginal utility of x given the level of p, whether individuals choose to invest $(E = 1)$ or not $(E = 0)$; this will tend to increase the consumption of x. At the same time, however, an increase in a increases the utility forgone when the individual does not survive, and since raising x lowers p, this secondary effect dampens the positive effect of increasing a on x. Yet, the net effect of an increase in a is nonetheless always positive

$$\frac{dx^{0*}}{da} > 0; \ \frac{dx^{1*}}{da} > 0. \tag{8}$$

Similarly, an increase in the degree of terrorism reduces consumption of x, for $E = 0$ or $E = 1$, by raising the implicit marginal cost

$$\frac{dx^{0*}}{d\tau} < 0; \ \frac{dx^{1*}}{d\tau} < 0. \tag{9}$$

(See appendix B).

Fear and Consumers' Taste

The endogeneity of fear (F) is in the foundation of our analysis. Individuals choose consumption of x, y and spending of $\pi_E E$ to maximize expected utility. They invest in controlling fear and overcome its distortive impact on their subjective beliefs if and only if

$$W^1 \left(x^{1*} \right) \geq W^0 \left(x^{0*} \right). \tag{10}$$

Consider a couple of comparative statics effects that relate terror, consumption of the terror-affected good, and spending to reduce fear.

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Consumers with greater taste for x are more likely to invest and overcome fear. We have seen that an increase in the taste for x would induce an increase in the consumption of x. That would raise fear since F is linearly related to x by equation (3). Therefore consumers with greater taste for x benefit more from spending π_E to reduce fear than others as utility forgone due to distortive beliefs is larger for them. Indeed expected benefits of investing in controlling fear $(W^1(x^{1*}) - W^0(x^{0*}))$ increase in tastes for x as measured by a

$$\frac{d\left(W^1(x^{1*}) - W^0(x^{0*})\right)}{da} > 0, \tag{11}$$

(see appendix B). Hence, consumers with a greater taste for x are more likely to spend π_E and overcome fear, given the degree of terrorism. Let $\hat{a}$ denote taste for x for which consumers are indifferent between $W^0(x^{0*})$ and $W^1(x^{1*})$ for a given degree of terrorism τ, media coverage m, skills s, prices π_x, π_E, and income I. Consumers with a taste for x that is greater than $\hat{a}$ will spend π_E, overcome fear and thus bring their beliefs closer to the objective danger whereas all others do not.

We have seen that an increase in the taste for x induces higher consumption of x whether $E = 0$ or $E = 1$. We also have shown that consumption of x, when investing in controlling fear, (x^{1*}), is always larger than the optimal consumption of x without investing in controlling fear (x^{0*}). Therefore, an increase in a will raise x.

The induced increase in E means that fear F must fall to zero for $a \geq \hat{a}$. Yet, among individuals who choose not to invest, fear increases with the individual's taste for x

$$F^* = f(\tau, m) x^* \cdot 1(a \leq \hat{a}) + 0 \cdot 1(a > \hat{a}). \tag{12}$$

The Impact of Terrorism on Fear and Consumption of Terror-Related Goods

The impact of an increase in the degree of terrorism on consumers' decisions to invest in controlling fear is ambiguous. When terrorism primarily increases objective dangers, consumers are less likely to invest in controlling fear. However, when terrorism has a negligible impact on objective danger but a large effect on subjective assessments of danger, then an increase in the degree of terrorism induces some individuals to invest to reducing fear.

The expected benefits of investing in controlling fear increase in the degree of terrorism if and only if the relative decline in the subjective probability to survive is larger

than the relative rise in objective danger

$$\frac{p_\tau^1}{p^1} > \frac{p_\tau^0}{p^0}. \tag{13}$$

Terror makes consumption of x less attractive as it increases objective danger and intensifies the emotion of fear for those who do not spend on controlling fear. When terrorism increases objective dangers more than subjective danger, that is when (13) does not hold, consumers are less likely to invest in controlling fear and therefore reduce consumption of x. When terrorism has a negligible impact on objective danger but a large effect on fear, such that (13) holds, then the impact of terrorism on consumption of x is ambiguous for those who invest in controlling fear.

We have shown that an increase in the degree of terrorism reduces consumption of x as long as it does not raise the expected benefit from investing in controlling fear. When terror incidents intensify fear – even in situations in which there is almost no impact on objective danger – consumers with a greater taste for x are less likely to change consumption plans whereas those with a lesser taste for x overreact and substitute consumption of x for all other goods (y). We now turn to the interaction between the effects of an increase in terrorism and greater tastes for x.

Media Coverage and Fear

Media coverage of disasters and atrocities may be particularly upsetting and hence trigger a particularly large emotional response in the form of fear. By making the extreme consequences of terrorism and other trauma-related news more tangible, by bringing into to people's homes, and by advertising the terrorism effects, media coverage appears to generate anxiety and distress (Slone, 2000; Schlenger et al. 2002). We represent that in our model by $f_m > 0$. Wider coverage lowers the expected marginal utility of x, given the level of objective danger and reduces consumption of x by those consumers who choose not to invest. Yet, it should have no impact on those who choose to invest.

Moreover, if media coverage (m) exaggerates *subjective* beliefs, it increases the economic incentives to invest in overcoming fear. While media coverage of terror attacks reduces consumption of x for those who do not control fear, it might mitigate the impact on the consumption of x for those who adjust their investment in controlling fear and hence bring their *subjective* beliefs more in line with *objective* dangers.

Ability and Fear

Individuals with greater cognitive (and non-cognitive) skills assess objective risk more accurately and therefore face lower cost of overcoming fear. We capture this in our model by assuming that *ceteris paribus*, they should be more likely to invest, overcome fear and act as if they evaluate the risk associated with terror appropriately (Simon, 1955, and Sternberg, 1985). Their optimal level of fear is lower than their less-able counterparts and, as a result, their consumption of the terror-infected goods should be less sensitive to terror attacks.

Testable Implications in Practice

Exogenous risk shocks shape people's choices by affecting objective risk and subjective beliefs. If overcoming fear is "technically" feasible, we expect individuals who had previously consumed sufficiently large quantities (frequent users) of what turned out to be a risky good to invest in overcoming fear, reduce fear, and mitigate the change in consumption of the terror-related good. Other individuals (occasional users) will reduce their consumption of the terror-related good comparatively more.

People's fear - the deviation between subjective and objective beliefs - is determined by the benefits and the costs of overcoming fear. Therefore, ceteris paribus, educated people, who face lower costs to assess objective risk accurately than their less educated peers, should be more likely to invest, overcome fear, and keep their consumption unchanged.

Exposure to media coverage of tragedy generates symptoms of anxiety and distress. (Slone, 2000; Schlenger et al. 2002). Therefore, ceteris paribus, we expect media coverage to intensify the effect of suicide attacks on the use of bus services (and other terror-infected goods and services), especially among occasional and less educated users.

Last but not least, the 'cross-goods' investment effects. Like other investments in human-capital overcoming fear demands specific and general capacities. Investment in overcoming the fear of bus attacks also reduces the fear of café-related attacks. Therefore café-related terrorist incidents should have a smaller impact on frequent bus users than on their occasional peers.

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3   A Brief Preview of the Econometric Approach and the Data

Equipped with our model we turn to the data. We shed light on the impact of fear associated with exposure to suicide attacks and the importance of economic incentives in people's decisions whether to overcome it. We aim at identifying the role of people's decisions in overcoming fear by evaluating the impact of terror attacks on the usage of goods and services subjected to terror attacks among frequent and occasional users.

We use daily micro data taken from the Israeli Central Bureau of Statistics Expenditures and Income Surveys for the years 1999 to 2004 and its bi-weekly diary. These data contain detailed information on goods and services that were affected by terror attacks and their usage by representative samples of the Israeli population. By combining these data with detailed, daily time series on terror attacks against Israeli targets during the "Al-Aqsa" intifada, we generate a unique micro data set which provides the opportunity to study the effect of anticipated, future, low-probability danger on people's fear, and the importance of economic incentives in their ability to overcome it.

In the next sub-sections we provide a brief overview on the randomized exposure of Israelis to terror incidents during the "Al-Aqsa" intifada, and micro data on the usage of goods and services that were subject to terror attacks taken from the raw data collected by the Israeli Central Bureau of Statistics Expenditures and Income Surveys.

The "Al-Aqsa" Intifada and the Data on Terror Attacks and Casualties

The last sustained wave of violence between the Israelis and the Palestinians, known as the "Al-Aqsa" Intifada, (also known as the "Second Intifada"), which began with then-Likud party leader Ariel Sharon's September 28, 2000 visit to the Temple Mount, was never declared over. The relatively low levels of violence during late 2004 and especially during 2005 were considered by many to effectively mark its unofficial end. During this conflict, about 4000 Palestinians and more than 1000 Israelis were killed.

To construct a daily time-series of terror attacks against Israeli targets and the corresponding casualties, we rely primarily on data provided by the Israeli Ministry of Foreign Affairs.[16]

The Israeli Ministry of Foreign Affairs web site describes in detail every incident on the Israeli side of the conflict (we confirmed these data with our own collection based

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[16]See: http://www.mfa.gov.il/MFA/Terrorism+Obstacle+to+Peace/Palestinian+terror+since+2000/Victims+of+Pal

on the "Haaretz" newspaper coverage). The data include the date each incident took place, the type of attack, the number of casualties, victim's ages, genders, localities of residence, and whether he or she was a civilian or member of the security forces (and on duty).

Equipped with these data, we construct a daily time-series of incidents and casualties disaggregated into military and civilians, within Israel's 1967 borders (including East Jerusalem) as well as in Gaza and the West Bank, since September 2000. We classify these incidents into eleven major categories: (i) bus-related attacks, (ii) café, mall and hotel related attacked (iii) other suicide bomber attacks, (iv) booby traps and demolition charge, (v) snipers and shooting, (vi) stabbings (vii) infiltrated (viii) ambush and kidnapping , (ix) "Kassam" rockets, (x) battles and (xi) all others.

Public buses were the most popular target, reflecting on the one hand the non-trivial costs of systematic security measures to protect bus passengers and the number of passengers per bus. It is not surprising to find that coffee shops, restaurants, discos and pubs were effective targets as well (appendix Table 1 reports the 20 most fatal terror attacks). Clearly, suicide bomber attacks, especially those that took place on buses or cafés, were the most "effective" mode of terror activity, causing the death of 8 persons and wounding more than 50 on average (Table 2 in the data appendix). Suicide bomber attacks were employed almost exclusively against Israeli targets within the 1967 borders, accounting for approximately 4 out of 5 civilian casualties. One third of all casualties were a result of bus attacks.[17] For these reasons we direct our analysis towards evaluating the effect of terror attacks on the consumption and usage of these goods and services within the 1967 borders.

Figure 4 provides a brief overview of terror incidents and fatal casualties on the Israeli side of the conflict by year and month. The number of casualties varied over this period, escalating to its peak on March 2002 and gradually dropping since then. It is worth noticing that suicide attacks on buses occurred mostly during a two-year window, beginning in late 2001. During this period, Israelis were exposed to suicide attacks on buses almost once a month, which suggests that we should use the variation in exposure to terror attacks within a month window in order to distinguish between the direct impact of suicide attacks and aggregate time effects.

Terror attacks and casualties were almost uniformly distributed over the weekdays (Sunday to Thursday) as Table 3 in the data appendix shows.[18] The decrease in terror

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[17]See Table 2 and Table 3 in the data appendix for detailed summary statistics of the terror attacks and the number of causalities by year, location, type and day in the week.

[18]This is consistent with randomization by day of the week. Palacios-Huerta (2003) and Palacios-

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attacks and casualties over weekends reflects the fact that buses do not operate (with minor exceptions) during the Jewish SHABAT (Friday afternoon until Saturday night).

The Israeli CBS Household Expenditure Survey

Consumption data are taken from five consecutive Household Expenditure Surveys collected by the Israeli Central Bureau of Statistics for the years 1999 to 2004 and corresponding biweekly diaries. The Household Expenditure Survey (hereafter: HES), a probability sample of about six thousands households that is representative of all households in Israel, is the primary source of information includes data on patterns of income and expenditures of households in Israel.

The survey consists of two components: (i) an interview survey that collects data on expenditures and incomes of consumer units as well as household demographics and (ii) a biweekly detailed diary filled out by members of the household, indicating the date in which expenditures occurred.

We use the biweekly diaries to construct a unique data set that includes, in addition to standard demographics and expenditures by main sub-groups, detailed information on households' daily expenditures and usage of public bus lines and taxi services, and expenditures in coffee shops, restaurants and pubs by day, month and year.

Since a three years army service at age 18 is mandatory in Israel, our main sample includes all households where the head ages 22 to 79. We exclude households with missing data on head's age, gender, country of birth and parents' country of birth (for Israeli-born), educational attainment, income and place of residence. Our main sample for the survey years 1999 to 2004 (January 1999 to January 2005) includes 27,439 households with non-missing data on demographics (see Table 4 in the data appendix).

4 The Empirical Approach

Count Data and the Functional Form

Bus rides or visits to cafés, restaurants and pubs take the form of count data, i.e. non-negative integer variables. In formulating, statistically, a demand process for bus rides we should recognize the count nature of the demand for these services. The integer nature of the data can be explicitly accounted for by modeling the observed number

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Huerta and Volij (2008) found that soccer players randomize in the field as well as in the lab.

of bus rides taken as the result of discrete choices. A number of discrete probability distributions satisfy our requirement of generating nonnegative integers.[19] The simplest and perhaps the most recognized model for count data is the *Poisson* distribution and its corresponding regression model.

Let Y_{it} denote the observed event count of interest, such as the number of bus tickets purchased, by person i during the time period t. Assuming that Y_{it} has the Poisson distribution with parameter λ_{it} then the basic Poisson probability distribution of demand for bus rides (or café visits) is:

$$\Pr\left(Y_{it} = n\right) = \frac{\exp\left(-\lambda_{it}\right)\lambda_{it}^{n}}{n!}, \qquad n = 0, 1, 2, \ldots \tag{14}$$

where n are the possible values of Y_{it} and λ_{it} is the conditional mean value and its variance. This model can be extended to a regression setting most easily by allowing for different λ_{it} which vary by observable individual attributes and specific time events such as terror incidents. Imposing the log-linear formulation for λ_{it}, ignoring other covariates (or assuming that these have already been conditioned out), one obtains the expected demand for bus services (or café visits) is:

$$\ln E\left(Y_{it} \mid T_{it}\right) = \mu + \gamma T_{it}, \tag{15}$$

where T_{it} denotes person i's exposure to terror attacks during the time period t. The log-linear regression function serves to constrain predicted values to be positive. The parameter γ can be interpreted as average proportionate change in the expected number of bus rides for a unit change in T_{it} and the demand elasticity evaluated at $T = 1$.[20]

The Statistical Model

Fear and the Reduced Form Impact

Terror attacks reduce the demand for bus services by increasing the perceived costs of usage. The reduced form effect combines the impact of terror incidents on people's fear and the perceived cost of a bus ride weighted by the implicit price elasticity.

For simplicity of illustration yet without lost of generality, the reduced form impact

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[19]Applications include firms' patenting behavior (Hausman, Hall, and Griliches, 1984), doctor and hospital visits (Cameron and Trivedi, 1986; Cameron et al., 1988), and daily homicide counts (Grogger, 1990).

[20]Substituting $\lambda_{it} = \exp\left(\mu + \gamma T_{it}\right)$ into (14) yields the log likelihood function for μ and γ which is globally concave and readily maximized.

can be expressed as the product of two parameters: η, the pre-determined demand elasticity (at $T = 1$), and δ the endogenous effect of terror on implicit prices:

$$\gamma = \eta\delta. \tag{16}$$

The key parameter of interest is δ. In our model δ is *endogenous* to the economic benefits and costs to overcome fear. For individuals who overcome fear, δ equals zero (when the objective danger is negligible).

Setting

In the absence of direct evidence on people's investment to control fear we attempt to identify δ by comparing the effect of terror attacks on the use of bus services and consumption at cafés and restaurants by frequent and occasional consumers.

For simplicity let us assume that there are only two types of consumers, *frequent* and *occasional*:

(i) Frequent users are those who would have consumed much of the "infected" good in the absence of terror. Following our theory we expect frequent users to invest, overcome fear, and practically keep their consumption from goods and services that were subject to terror attacks unchanged.

(ii) Occasional users are those who would have consumed little from these goods and services in the absence of terror. They should not invest in controlling fear; rather our model predicts that occasional user are expected will substitute out of bus services (or cafés) into "uninfected" goods.

Specification

Let R_i be equal to 1 if person i is a frequent (regular) user and 0 otherwise. Following (15) the conditional mean of Y takes the form:

$$\ln E\left(Y_{it} \mid T_{it}, R_i\right) = \mu_0 + \mu_1 R_i + \gamma_0 T_{it} + \gamma_1 T_{it} R_i, \tag{17}$$

where μ_0 and $\mu_0 + \mu_1$ stand for the mean consumption during the time periods without terror attacks by occasional and frequent users respectively. The parameters γ_0 and γ_1 represent the reduced form effect of terror attacks on *occasional* users and its *differential* impact on *frequent* users. $\gamma_0 + \gamma_1$ is the reduced form effect of terror attacks on *frequent* users.

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Identification and Structural Interpretation

Frequent users might be less affected (negatively) by terror incidents, $\gamma_1 > 0$, for two reasons. First, they might have a lower pre-determined demand elasticity, $(\eta^1 - \eta^0) > 0$. Second, frequent users have stronger incentives to control fear than occasional users $(\delta^1 - \delta^0) < 0$. Formally:

$$\gamma_1 = (\eta^1 - \eta^0)\,\delta^1 + (\delta^1 - \delta^0)\,\eta^0. \tag{18}$$

Indeed, $\gamma_1 > 0$ is consistent with the interpretation that frequent users control their fear more than occasional users do $(\delta^1 - \delta^0) < 0$. Yet, $\gamma_1 > 0$ might also reflect pre-determined differences in demand elasticities $(\eta^1 - \eta^0) > 0$.

Identification

Separating pre-determined latent factors (η) from latent choices (δ) is not trivial. We employ two strategies to account for unobserved (by the econometrician) pre-determined demand factors.

Monetary Price Elasticity as Proxy to Implicit Price Elasticity   While we do not observe non-pecuniary costs, other than those associated with terror attacks, we do have data on monetary prices and number of bus-ride tickets. Following Altonji, Elder and Taber (2005) we utilize the bias on 'observables', in this context differences in monetary price elasticity, to assess the bias on 'unobservables' and obtain lower bound estimates.[21]

Let η_M^0 and η_M^1 reflect the monetary price elasticities of demand among occasional and frequent users respectively. Assuming that the bias on observables, that is $(\eta_M^1 - \eta_M^0)$, is in the same direction as the bias on unobservables, that is $(\eta^1 - \eta^0)$, then as long as $(\eta_M^1 - \eta_M^0) \leq 0$ the following holds:

$$\gamma_1 \leq (\delta^1 - \delta^0)\,\eta^0. \tag{19}$$

Thus, under this assumption, the reduced form differential impact (γ_1) provides a conservative estimate of the additional consumption that occasional users would have

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[21]Recently, Altonji, Elder and Taber (2005) developed estimation methods based on the idea that the amount of selection on the observed explanatory variables provides a guide to the amount of selection bias on the unobserved factors. They provide lower and upper bound estimates assuming that the ratio of bias on 'unobservables' is the same as selection on the 'observables'.

engaged in if they had invested like their frequent users peers.

Cross Goods Investment   Overcoming the fear of bus attacks should also reduce the fear of café-related attacks, as long as investment is not entirely good-specific. We utilize this 'cross-goods' investment effects to further separate between pre-determined factors and choices.

Although frequent and occasional bus users differ in their demand for bus services, they do not necessarily differ systematically in their demand for café services. In that case, comparing frequent and occasional bus users responses to café-related attacks provides an appropriate treatment-control group setting to identify the role of economic incentives on peoples' choices in overcoming fear:

$$\gamma_1^{café} \leq \left(\delta^1 - \delta^0\right) \eta^0, \tag{20}$$

where $\gamma_1^{café}$ represents the reduced form additional impact of terror café-related attacks on café visits by frequent bus users.

In Practice

We estimate the effect of suicide attacks on the use of bus services and visits to cafés by frequent and occasional users. That is, we use both methods to assess and control for omitted variables. We use monetary price elasticity to assess the potential bias on 'unobserved' non-pecuniary costs. And, we also examine the behavior of frequent and occasional bus users in response to terrorist attacks on coffee shops, bars, and restaurants.

5   First Glance at the Overall Effect of Terror on the Use of Public Transportation

Bus services are the most popular form of public transportation in Israel, both for local and inter-city trips. It is thus not surprising that Israeli public transportation system, especially public bus routes, were subject to suicide bombings during the "Al-Aqsa" intifada. The public bus transportation sector is regulated with regard to fares, entry into the market, terms of operation and subsidies. Privately owned companies operate buses. The Egged Bus Cooperative is Israel's largest bus company (and the second largest in the world, even though it serves a population of just over six million people),

and it operates routes throughout the entire country. Egged provides about two thirds of Israel's public transport. Yet in every major city or region there are also local bus companies.

We preview our further analysis with a brief overview on the possible effect of terror attacks on the usage of public bus routes using aggregate monthly data taken from the Israeli CBS Transport Statistics Quarterly for the years 2000 to 2005.

Figure 5's solid line draws an index of revenues from regular bus line on scheduled routes in constant prices (2000=100). The bar time series reports the number of casualties from terror attacks on buses and bus stations. As Figure 5 makes clear, the usage of bus services, as measured by revenues from regular bus lines, was approximately 10 percent lower within the period when most bus-related attacks had occurred.

The drop in usage of regular bus services might reflect aggregate economic activity or factors other than the direct impact of suicide attacks on peoples' fears and choices. We take advantage of our micro daily data to evaluate the causal effect of terror attacks conditioning out potential aggregate effects.

Table 1 reports regression coefficients of bus-related suicide bomber attacks on the use of public bus transportation by Israeli households. The dependent variable in all specifications is the number of bus tickets purchased per day by Israeli households. The treatment variable – the exposure to terror – is measured by the number of bus-related suicide bomber attacks that occurred during the past week (that is between yesterday and seven days ago). We report OLS and Poisson Regression estimates for each specification.

Two main facts emerge: (i) the micro data is consistent with the aggregate outcomes proxy by bus revenues and (ii) accounting for aggregate unobservable effects using year, month, and day of the week fixed effects, we find that the number of bus tickets purchased drops by approximately 6 percentage points following a bus-related strike.[22] These results are robust to functional forms that relax the equidispersion restriction of the Poisson regression model.[23]

The vast majority of bus-related suicide attacks were carried out in the largest

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[22]Estimates are robust to the inclusion of day of the year fixed effects (see online appendix, Table W1).

[23]The signature features of the Poisson model are its log-linear conditional mean function and its equidispersion. Yet, it is common to find that the variance is larger than the mean implying over dispersion in the data. The negative binomial model is often employed as a functional form that relaxes the equidispersion restriction of the Poisson model. Therefore, we also present corresponding estimates of the negative binomial model. Clearly the Poisson and negative binomial point estimates are statistically indistinguishable as reported on the online appendix, Table W2.

cities. Do suicide bus-related attacks have larger effect on residents in these cities than elsewhere? Table 2 reports the regression coefficients of bus-related suicide bomber attacks on the number of bus tickets purchased by Israeli households living in the largest cities (i.e. at least 100K inhabitants) and other locations. As expected, we find that most of the aggregate reduced form impact reflects the effect of bus-related suicide attacks on bus tickets purchased by the population of the largest cities. The number of bus tickets purchased in the week following a bus-related attacks dropped by approximately 8 percentage points in the largest cities and by less than 2 percentage points (statistically insignificant) in all other locations. The difference in the drop in bus tickets purchased between large cities and other locations is statistically significant.

Having evaluated the effect of bus-related suicide attacks on the use of public bus services in the week following the attack, we next consider the impact over time by estimating the effect of suicide bomber attacks during the first three days, the first week and over a two-week and a four-week windows. Table 3 reports the Poisson Regression estimates. We find a large drop of approximately 9 percentage points in the number of bus tickets purchased during the week following the attack. The use of bus services recovers in the following weeks, yet, still not to its pre-attack levels. Four weeks following a bus-related attack the number of bus tickets purchased is approximately 3 percentage points lower than before.

Do bus-related incidents have larger impact than other terror attacks on the use of public bus transportation? In Table 4 we evaluate the effect of bus-related terror attacks and all other incidents on the usage of bus services. The dependent variable in all panels is the number of bus tickets purchased per day. Since suicide attacks on buses generated more casualties than other forms of terror, we control for the number of fatalities.

There are two relevant findings. Terror attacks reduce the number of bus tickets purchased. And, this reduction is fully accounted for by bus-related terrorist incidents. While Israeli households reduce their usage of bus services immediately following bus-related terror strikes, we find that other forms of terror attacks have no impact, on average, on the usage of bus services.

The effect of terror attacks carried out on buses should also be reflected in the demand for taxi services in the days immediately following an attack. Table 5 reports the Poisson regression coefficients of bus-related suicide bomber attacks on the number of taxi rides purchased in the largest cities and in all other locations. While terror has no significant effect on the overall use of taxi services (first column), we find that

bus-related suicide attacks increase by slightly less than 10 percent the number of taxi rides taken by residents at the largest cities (i.e. at least 100K inhabitants).

Low probability events such as the likelihood of being harmed by a terror attack have large effects on consumption of "infected" goods and services (and their substitutes), as the Israeli data on the usage of public bus services indicate. Clearly, consumers appear to behave 'rationally', at least in the sense that those who are not effectively exposed to terror do not change their usage of bus services.

6   The Impact of Bus-Related Attacks on Frequent and Occasional Bus Users

Our theory points to the importance of economic incentives in people's choices to overcome "irrational" fears. To identify the role of economic incentives in people's decisions to overcome fears - and distinguish between our theory and alternative explanations - we compare the effect of terror attacks on the demand for bus services by frequent and occasional users.

Evidence from the Single-Rides, Multiple-Rides and Monthly Passes Purchased

The Israeli bus companies offer three major types of tickets: (i) standard single-ride tickets within the city and close suburbs, (ii) multiple-ride tickets, and (iii) monthly passes with unlimited use during a limited period. The popular multiple-ride tickets are for 5 to 10 rides and often sold for the cost of 4 to 7 rides. The monthly pass is personal and restricted for use in particular locations. It follows that the multiple-ride tickets and the monthly passes tickets are mainly attractive to frequent users.

Our micro data provides information on the number of tickets purchased by these three categories. Employed with these data we evaluate the effect of suicide attacks on the number of (i) standard single-ride tickets, (ii) multiple-ride tickets, and (iii) monthly passes. Since monthly passes are offered to the public during the last week of the month and in the first week of the coming month we exclude observations outside of these two weeks in evaluating the impact of bus-related terrorist incidents on the number of monthly bus passes purchased.

As reported in Table 6, the overall drop in number of bus tickets purchased reflects solely the impact of suicide attacks on the number of single-ride tickets. We also find that suicide attacks impact neither multiple-ride tickets nor monthly passes. For

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instance, while a bus-related attack reduces the number of single ride tickets purchased during the following week by approximately 9 percentage points the number of either multiple-ride tickets or monthly passes remains on average unchanged.[24]

Since single-ride tickets are more likely to reflect the demand for bus services by occasional users, our findings suggest that suicide attacks primarily affect occasional users of bus services. Terror attacks have no impact on the demand for bus services by frequent users.

Although the differential impact of suicide bomber attacks on the number of single-ride and multiple-ride tickets is consistent with the main testable implication of our model, this result might reflect factors other than the differential incentive of frequent and occasional users to invest in overcoming fear. For instance, if the demand for multiple-ride tickets is less sensitive to implicit prices than the demand for single-ride tickets, then our estimates might be reflecting pre-determined demand elasticities rather than the differential impact of bus-related attacks on frequent and occasional users implicit fears.

We address this potential concern by comparing the demand elasticity of single-ride tickets, with respect to monetary prices, with the demand elasticity of multiple-rides and monthly passes, using data prior to the 'Al-Aqsa' Intifada. The Israeli Ministry of Transport and Road Safety regulates bus-ride prices. These vary by location and route. We use the bi-weekly diaries to construct quarterly time series of single-ride, multiple-rides and monthly passes prices for each location of residency in the Israeli Central Bureau of Statistics Expenditures and Income Surveys. Combined with the reported numbers of single-ride, multiple-rides and monthly passes purchased we estimate the demand price elasticity of these bus tickets. Estimates are found in Table 7. Since the location-time variation in bus-rides prices might reflect demand factors as well, estimates should be taken with a grain of salt. Yet, as Table 7 shows, the monetary price elasticity of multiple-ride tickets and the elasticity of monthly passes are *both* larger than the price elasticity of single-ride tickets.

Hence, the large drop in single ride tickets purchased following a bus-related terror strike in contrast to the negligible change in the number of multiple-rides tickets and monthly passes purchased is not simply because the demand for single-ride tickets is

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[24]It is worth noticing that the estimated effects of bus-related attacks on multiple-rides and (especially) monthly passes are imprecise, reflected in high standard errors. Therefore, while the estimated effect of bus-related attacks on multiple-rides tickets and monthly passes are statistically indistinguishable from zero, the differences between the estimated effects of bus-related attacks on single-ride and multiple tickets are marginally significant.

more elastic.

There is another potentially confounding issue. While the purchase of a single-ride bus ticket is a good proxy for usage, the timing is less clear for multiple-ride and monthly passes. Multiple-rides tickets can be used in lower frequency and monthly passes might still be attractive to most of the frequent users, even if they have similar fears as others, especially if the negative impact of terror attacks last for a few days only. Thus, comparing extensive margin (multiple-rides tickets and monthly passes) to intensive margin effects (single-ride) might result in overstating the differential impact of bus-related incidents on occasional and frequent users.

To address this concern, we limit the analysis to purchasers of single-ride ticket and distinguish between frequent and occasional riders, while also differentiating between car owners and others to proxy for the pre-determined demand for bus services.

The Effect of Bus-Related Attacks on Single-Ride Tickets Purchased by Car Owners and Others

The Expenditure and Income Survey contains information on car ownership and the use of vehicles. About two thirds of Israeli household report owning at least one car. We utilize the cross-households variation in car-ownership to proxy pre-terror demand for public bus services.

The number of cars per capita did not change notably in response to terrorism. In fact the stock of private cars grew slower during the "Al-Aqsa" intifada period than in the years before (or after). Our household data indicate no change in the number of private cars per household during this period, consistently with the aggregate data[25]. Thus, while at the margin, car ownership is presumably affected by the exposure to bus-related terror incidents, this has been a comparatively inelastic margin during our sample period. Nevertheless, we exclude potential recent car owners by restricting the sample to head of households 30 years of age or older. Since car ownership rates are much lower among the elderly, we further exclude from this sub- sample head of household older than 65 year of age.

We divide the population sample to households who own at least one car, 'car owners', and to all others. We estimate the impact of bus-related attacks on the number of single-ride tickets purchased per day among car owners and among all others. Table

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[25]Israel charges very high implicit import taxes. The overall rate of taxation, due to port taxes, purchasing taxes and VAT, varied in the early 2000s, between 128% or 144%, depending on the source country. The result is that a car in Israel costs twice as much as in the United States. Gasoline costs are approximately three times greater than those in the United States.

8 reports our findings.

The first panel shows the average number of single-ride tickets per household as measured prior to the "Al-Aqsa" Intifada while differentiating by car ownership. As expected, car owners use public-bus transportation less frequently than non-car owners.

The second panel depicts the impact of bus-related incidents on the use of bus-line services while differentiating by car ownership. Bus-related attacks have a large impact on single-ride tickets purchased among car owners. During the first week following a bus-related attack, the number of tickets purchased by car owners dropped by approximately 17 percentage points. In contrast we find a much smaller impact of bus-related attacks on the number of single ride tickets purchased by non-car owners. The differential impact of bus-related attacks is found whether we measure the impact of bus-related incidents three days, one week or two weeks after. These result hold despite the finding that car owners are less responsive to prices (see panel c).

The effect of Bus-Related Attacks on Frequent and Occasional Single-Ride Users

Next we evaluate the differential effect of suicide attacks on frequent and occasional users by the observed use of bus services prior to terror attacks rather than by the type of ticket purchased. We disaggregate the population sample by number of bus tickets purchased prior to suicide attacks into frequent and occasional users. Since our panel data is limited to a 14-day window, we use a sub-sample of households that were not exposed to suicide attacks during the first 3 weekdays in the sample or during the week before that. In order to focus on those who use bus line services we exclude households that did not purchase at least one bus-line ticket during the first three weekdays of the survey. Between January 1999 and October 2000, before "Al-Aqsa" intifada had started, approximately 60 percent of all households purchased at least one single-ride ticket during the two-week window they were surveyed.

We divide the sub-population sample by the number of tickets purchased during the first three weekdays surveyed into two groups: (i) those who purchased less than one single-ride ticket per household member and (ii) those who purchased one single-ride ticket or more.

We estimate the effect of bus-related suicide attacks during the following ten days separately for these two groups. The results are found in the first panels of Table 9. We find a large drop in the number of single-ride tickets purchased by occasional users. This holds whether we measure the effect immediately after a bus-related attack

or over the next couple of weeks. In contrast we find only a mild and marginally significant effect on frequent users. The differences between these groups are notable and statistically significant.

Although measured in a time window without bus-related attacks the number of single-ride tickets might reflect pre-determined latent differences in assessments of risk or attitudes toward fear-inducing incidents than economic incentives to overcome fear. To address this concern we use households' demographic characteristics, including car ownership, to project whether a household belongs to the frequent or the occasional users category. Results are found in the third panel of Table 9. We find similar results when we use the projected past usage rather than the actual number of tickets to proxy pre-terror demand for bus services. Hence, the differential impact cannot be simply attributed to latent attitudes to risk or fear-inducing incidents.

Since buses might be viewed as a necessary mode of transportation for frequent users, we also examine how terrorist incidents affect café visits.

7 The Impact of Suicide Bomber Attacks on Café Visits by Marital Status

Coffee shops, restaurants and pubs were popular targets for terror attacks. This is not surprising since these places tend to be crowded enough to make a suicide attack "effective", in terms of casualties, and yet these establishments are typically not large enough to pay the fixed costs associated with purchasing security to deter terrorist attacks. This is reflected in the list of top-ranked terror attacks sorted by the number of fatal casualties (see data appendix Table 1). Three out of the 10 most fatal terror suicide attacks took place either in restaurants (Haifa, Jerusalem), coffee shops (Jerusalem, Café Hillel) or discos and game clubs (Tel Aviv and Rishon Lezion, respectively).

Consumption at coffee shops, restaurants and pub varies by age, income and, especially, marital status. Since many dating activities take place in these types of public locations, we should expect singles, particularly in early stages of their adult lives, to consume more of these services.

To isolate the effects of age, religion and location, we compare married couples without children and singles, who are between the ages of 25 to 40, live in one of the major cities within the 1967 borders (including the Jewish neighborhoods outside of the 1967 borders in Jerusalem). We exclude singles from cohabiting unions by restricting the sample to singles that live on their own (about three quarters of singles 25 to 40

years of age). Since spending in cafés by non-married couples might not be equally shared among men and women, we focus on single men.

Before terrorist incidents, married males without children visit coffee shops, restaurants and pubs as frequently as their single counterparts. The first panel in Table 10 reports the number of visits per day to cafés, restaurants and pubs, as measured during the period prior to the "Al Aqsa" Intifada. We find almost no differences in the number of visits to cafés between singles aged 25 to 40 and their married counterparts without kids.

Does the effect of suicide attacks on visits to cafés (restaurants and pubs) vary by marital status? Table 10 panel (b) reports the effect of suicide attacks on the number of visits to cafés, restaurants and pubs, by marital status, respectively. In the days immediately following a suicide attack young Israeli Jews 25 to 40 years of age, who have no children, reduce their visits to cafés, restaurants and pubs by approximately 10 percentage points.

The overall impact of suicide attacks on café visits is fully accounted for by married individuals. We find that young, married individuals drop their visit to cafés in the first three days immediately after a suicide attack by approximately 30 percentage points and by almost 15 percentage points per day during the following week. In contrast we find no change in the frequency that singles of visit cafés, pubs and restaurants following a suicide attack. The effect of suicide attacks on married individuals does not last long. It takes married individuals about two weeks to return to their pre-attack figures.

It is apparently more expensive for singles to substitute away from cafés than for their married counterparts, as they tend to date more. Therefore, ceteris paribus, suicide attacks should have a larger impact on married couples. However, the fact that we find no change in singles visits following a suicide attack, suggests that the impact of suicide attack on married individuals cannot be fully attributed to differences in price elasticity.

8   The Effect of Café-Related Attacks on Frequent and Occasional Bus Users

Thus far, the results are consistent with the view that economic incentives shape people's decisions to overcome the fear induced by terrorist acts. Occasional users of bus services respond much more to terrorist acts than frequent users. Singles keep

their visits to cafés unchanged following a suicide attack in contrast to their married counterparts who, at least for a while, reduce their cafés visits.

Yet, frequent bus users have different demand for bus services from occasional users and singles are different from married couples beyond their incentives to invest in controlling fear. Separating between pre-determined unobserved (to the econometrician) demand factors and unobserved investment in overcoming is not a trivial task, especially as these latent factors could be positively correlated.

To address this concern, we examine the behavior of frequent and occasional bus users in response to terrorist attacks on coffee shops, bars, and restaurants. If investment in overcoming the fear of bus attacks also reduces the fear of café-related attacks, then frequent bus users should be less affected by café-related terrorist attacks than occasional bus users, even if they have similar pre-terror demand for cafés services. Indeed, if the relatively mild effect of terrorist incidents on regular bus users reflects their investment in overcoming fear, then café-related terrorist incidents should also have a smaller impact on frequent bus users than on their occasional peers. Thus, we utilize the 'cross-goods' investment in overcoming fear effect to further identify the importance of economic incentives in peoples choices to overcome fear.

Specifically, we estimate the impact of café-related attacks on visits to cafés by frequent and occasional *bus users*. The key identifying assumption is that frequent and occasional bus users have similar pre-terror demand for cafés, yet have different incentives to invest in overcoming fear. We focus on single-ride ticket purchases. We divide the sample into high and low frequency riders by using reports prior to suicide attacks, as we did in Table 9. Since past usage might reflect pre-determined differences in attitudes to fear we also classify single-ride ticket purchases using the projected propensity to purchase at least one single-ride ticket during the first three days in the sample, (as we also did in Table 9).

The first panel of Table 11 reports the crude and residual differences in the number of cafés visits per day prior to the "Al-Aqsa" Intifada. We find no difference between frequent and occasional bus users.

Although frequent and occasional riders are indistinguishable prior to terrorist attacks in their demand for café services, they respond differently to terrorist attacks. Panel (b) reports the Poisson regression estimates. We find a large effect in the days immediately following a café-related attack. Note that it is the café-related and not bus-related attacks that matter. The impact of café-related attacks reflects the drop in cafés visits by occasional bus users. The number of visits to cafés by occasional bus

users dropped by more than 50 percentage points in the first three days following a café-related attack.

In contrast we find no effect on café visits by frequent bus users. We obtain similar effects even when we divide the population the population of single-ride ticket purchases into those projected to be frequent and occasional bus users using demographic characteristics, suggesting that the results do not simply reflect person-specific pre-determined attitudes toward terror.[26]

Hence, consistent with our theory, café-related terrorist incidents dramatically reduced café visits by occasional bus users, but these terrorist incidents had almost no effect on frequent bus users. These findings cannot be attributed to latent demand factors as frequent and occasional bus users seem to have indistinguishable demand for cafés services. Our findings, therefore, highlight the importance of economic incentives in shaping peoples' choices even in an environment in which emotion and fear are relevant factors.

9   A Further Look at the Mechanism

In this section we further explore the underlying mechanism by evaluating the effects of education and exposure to media coverage on the overall impact of bus-related suicide attacks and their particular impact on frequent and occasional users of bus services.

Education and the Impact of Terror

The concept of "ability" as an important input in the capacity to adjust to changes is central both in economics and modern psychology. Decision-making is complex. Rational agents certainly experience limits both in collecting and processing information and in formulating and solving problems (Simon 1955). Sternberg (1985) emphasizes the role of cognitive abilities in adjusting and performing within an unfamiliar environment: "Intelligence is not so much a person's ability to learn or think within conceptual systems that the person has already become familiar with as it is his or her ability to learn and think within new conceptual systems, which can then be brought to bear upon already existing knowledge structures" [page 69]. Schultz (1975) recognized the role of "ability" in agents' capacity to deal with disequilibria. "Intelligence" is a

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[26]Systematic biases in risk perceptions, especially by less frequent users of the "risky infected" goods, are well documented in the literature on health behavior and risks. For instance, Viscusi (1990) finds that smokers and especially nonsmokers greatly overestimate the lung cancer risk of cigarettes.

scarce resource. Yet like other forms of human capital, "entrepreneurial ability", is a market service with a market price and quantity, providing a rational cost-benefit interpretation to what might be viewed as "bounded rational" outcomes.

An extensive body of research in psychology and behavioral economics points to the effect of cognitive abilities on the extent to which people deviate from the predictions of economic theory (Kahneman 2003), attributing systematic deviations from the predictions of standard decision theory to a lack of cognitive skills (Thaler 1992).

A natural implication of these views is that individuals with greater cognitive ability assess objective risk more accurately or are more likely to overcome fear and act as if they evaluate the risk associated with terror appropriately. It is worth noticing that human capital may affect people's responses to terror attacks via other channels. Educated individuals earn more and live longer than their less educated counterparts, making the effective cost of terror attacks larger for them, thus suggesting that reduced form effects tend to understate the "ability" of educated individuals to overcome fear.

We evaluate the role of cognitive abilities in overcoming fear by estimating the impact of suicide attacks on the use of bus services while differentiating by educational achievement. We disaggregate the population sample according to the head of household's education into two groups: (i) households where the head has some college education or more and (ii) all the others. We estimate the impact of suicide attacks on the number of single-ride tickets purchased, in the first three days, during the first week following a bus-related attack, and over a two-week and a four week-period periods separately for these groups. We report Poisson regression coefficients in Table 12.

We find that both the educated and the less-educated reduce the number of bus tickets purchased by approximately 7 percentage points in the first three days following an attack. Hence, we find no differences between the reaction of educated and less-educated families to suicide attacks on buses during the first days.

Yet, the response over time is different. While the less-educated keep their usage of bus services, as measured by single-ride tickets, lower than their usage prior to the suicide attack, we find only a mild impact of suicide attacks on the usage of bus services by the educated. Hence, while both groups seem to have similar reactions in the very short run, it is the educated that return to their regular consumption faster than their less-educated counterparts. Table 12 clearly shows that the drop in the number of single-ride tickets should be attributed to the less-educated households. These results point out that the overall "over-reaction" reflects the impact of suicide attacks on

less-educated families, those who presumably are "locked in" and often perceived as having fewer "transportation options," rather than the response of educated families to implicit costs.

In our theory, overcoming fear is endogenously determined by the costs and the benefits. The results above are consistent with the interpretation that individuals with greater cognitive ability assess objective risk more accurately, face lower costs to overcome fear and therefore are more likely to act as if they evaluate the risk associated with terror appropriately.

Do low ability people overcome fear when the returns to overcoming fear are large? To address this questions, we estimate the effect of bus-related attack on educated and less educated individuals, while differentiating between frequent and occasional users. Following our previous experiments we focus on single-ride ticket purchases (see Table 9 and Table 11). We estimate the effect of a bus-related incident in the following three days, one week and two-week periods. The results are found in Table 13.

Educated and less educated bus-users respond very differently to bus-related suicide attacks. While the less educated bus-users reduce the number of single-rides by approximately 15 percentage points following a bus-related incident, we find almost no change in the use of bus services by educated users with some college education.

The differential effect of bus-related suicide attacks on educated and less educated bus users is found mainly among occasional bus users. For instance, while the less educated users reduce the number of single-ride tickets purchased by approximately one third during the first three days following a bus-related attack we find a mild and statistically insignificant drop in the number of single-ride tickets purchased by educated occasional users. In contrast we find only a mild drop in the number of single-ride tickets purchased by the less-educated frequent bus users and almost no change in single-ride tickets purchased by the educated frequent users.

Our findings are consistent with growing literature pointing to the role of cognitive abilities in assessing objective risk more accurately. Further they also show, consistent with our theory, that when it matters and pays back, the less educated act as if they evaluate the risk associated with terror almost as accurately as their educated peers do.

The Exposure to Press and the Impact of Terror

How does media coverage of disasters and atrocities affect the public? While it presents information that may minimize the gap between objective risk and subjective percep-

tion, it also shows images that may be particularly upsetting, making the extreme consequences of suicide attacks and other trauma-related news a salient phenomenon.[27]

The public tunes in to the news during such events and attends to it more carefully. This is well reflected in people's attention to media coverage of catastrophes. For instance, in the week following the September 11 attacks, 63 percent of 1,200 American adults polled reported that they "could not stop watching" news about the terrorist attacks (Pew Research Center, 2001).

Media coverage of terrorism generates anxiety and distress. For instance, Slone (2000) finds in a laboratory study of Israeli adults that those who watched terrorism-related news endured higher levels of anxiety than those who watched other types of news. Schlenger et al. (2002) find, using a survey of adults in the United States conducted two months after the September 11 attacks, that prevalence of clinically significant psychological distress symptoms was positively associated with hours of television coverage of the attacks watched and number of different kinds of graphic events seen on television. Moreover, they find that this was significantly higher among residents of New York City than other Americans. While these empirical studies (and others) provide evidence supporting the prevailing perspective on the impact of extensive coverage on aggregate public anxiety, they are unable to link public fear to individuals' choices and outcomes.

We take advantage of our micro data and the natural variation in Israelis' exposure to media coverage of terrorist events to fill this important gap. Israeli newspapers are not printed during Saturday (SHABAT) or on holidays. We use this natural variation in the exposure to media coverage to evaluate the impact of suicide attacks that took place either before the weekend (excluding Friday) or before a holiday in comparison to the impact of suicide attacks that were followed by regular weekdays' media coverage.

We do so by estimating the effect of bus-related suicide attacks on the number of single-ride tickets purchased three days later during weekdays. The 'treatment' consists of those bus-related incidents that occurred during a weekday and were followed by regular weekdays only. The 'benchmark' events are those bus-related attacks that occurred during a weekday yet were followed in the next two days by either by a weekend or by a holiday. In both cases outcomes, that is the number of single-ride

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[27]There is a growing literature on the effect of the media on political outcomes and violence. Studies by Besley and Burgess (2002), Stromberg (2004) and DellaVigna and Kaplan (2007) provide evidence that media exposure affects political outcomes. For its impact on the allocation of time and its consequences on violent crime and educational outcomes see Dahl and DellaVigna (2010) and Gentzkow and Shapiro (2008) respectively.

tickets purchased, are measured in weekdays only.

We report our findings in Table 14. The first column shows the Poisson regression coefficient of the number of single-ride tickets on a bus-related suicide attacks occurred three days ago. The number -0.023 reflects an approximately 2.3 percentage points drop in the number of single-ride tickets purchased three days after suicide attack on a bus. The second column shows the Poisson regression coefficient of the number of single-ride tickets on bus-related suicide attacks occurred three days ago followed by weekdays. The third column reports the impact of bus-related suicide attacks that had occurred on weekdays and were followed by holidays (or Saturday) on the number of single-ride tickets purchased on weekdays.

As Table 14 clearly shows, while we find large impact of suicide attacks during regular media coverage days (column (ii)), we find almost no impact of these attacks on bus ridership when they are followed either by a holiday or a weekend. Our findings are consistent with evidence suggesting that risks from accidents that have received widespread publicity are more likely to be overestimated (Combs and Slovic 1979; Fischhoff et al. 1981).

Does the exposure to media coverage affect educated and less educated similarly? To address this question we re-estimate the extra impact of suicide attacks that were followed by weekdays and its typical media coverage on educated and less educated households separately. Results are found in Table 15. The first column in each panel reports the average drop in the number of single-ride tickets three days after a suicide attack on a bus. The second and the third columns report the percentage change in the number of single-ride tickets three days after a bus-related attack by whether the intervening days include holidays or not respectively. As in Table 14 both bus-related attacks and the number of single-ride tickets are observed and measured during regular weekdays. Clearly, suicide attacks reduce the number of single-ride tickets purchased only when these attacks are followed by weekdays with its typical media coverage.

These findings are consistent with the view that media coverage tends to have larger "manipulative" impact on the less educated. While suicide attacks have no effect on the use of bus-services by the educated, even when attacks were followed by weekdays, suicide attacks have large impact on the number of single-ride tickets purchased by the less educated. Moreover, the large impact of suicide attacks on the use of bus services by the less educated is found only when these attacks were followed by weekdays.

Does the exposure to media coverage affect frequent and occasional users similarly? To address this question we use car ownership to proxy pre-terror demand for bus

services. (as in Table 8). We estimate the impact of bus-related suicide attacks allowing their impact to vary between groups and by whether the intervening days include weekends and holidays or weekdays only. We present our findings in Table 16. The first entry -0.026 reports the overall percent drop in the number of single-ride tickets purchased on average three days after a bus-related attacks by car-owners. The second column and the third columns report the percentage drop in the number of single-ride tickets three days after a bus-related attack by whether the intervening days include weekends or holidays or not.

Two main findings emerge: bus-related attacks followed by a weekend or a holiday have no impact on the use of bus services. This holds for car owners and others. In contrast we find large differences in the impact of bus-related attacks on the use of bus-services by car owners and others when these incidents are followed by regular weekdays. These evidence are consistent with the interpretation that media coverage have a notable impact, yet only on occasional users. Moreover, the fact the use of bus services drops following a bus-related suicide attack, yet only when incidents are followed by regular media coverage day and only by occasional users cannot simply be attributed to the common tendency to overstate very low probability events.

10   Conclusions

This paper offers a broader approach to the economics and psychology of fear than past research and provides empirical evidence that supports our theory of how different people respond to the emotion of fear generated by terrorist attacks. We explicitly consider both the impact of danger on emotions and the distortive impact of those emotions on subjective beliefs and individual choices. But, we also acknowledge that individuals are not oblivious to their emotional responses and the consequences of those emotions. Thus, we explicitly account for individuals' capacity to manage their emotions and control fear. Since managing emotions is costly and since the benefits of controlling fear differ across individuals, people differ in how much they invest in controlling fear in predictable ways. The distortive impact of terrorism is limited by the economic benefits of controlling that innate, emotional response.

To assess the role of economic incentives in shaping people's decisions to overcome the fear triggered by terrorist acts, we study the reaction of Israelis to terror incidents during the "Al Aqsa" Intifada. We differentiate between the reactions of individuals that are frequent users of goods and services that are subject to terrorist attacks from

individuals that are only occasional users. We estimate the impact of both bus-related suicide attacks on the usage of public bus services and café-related terrorist incident on visits to cafés, while differentiating among different types of users.

Consistent with our theory, the overall impact of attacks on the use of services and goods subject to terror attacks is completely accounted for by the reactions of occasional users. We find no impact of suicide attacks on the demand for these goods and services by frequent users. Our finding that frequent and occasional users respond differently to terrorism might reflect pre-determined demand factors rather than differential investments in overcoming fear, so we extend the analyses along several dimensions.

To shed further empirical light on the underlying mechanisms, we evaluate the impact of education and media coverage on people's responses to terrorist attacks. Consider education first. If people with greater cognitive and non-cognitive abilities have a greater capacity to assess risk and control fear, and if educational attainment is positively associated with cognitive and non-cognitive skills, then more educated individuals will be more likely to overcome fear and act as if they evaluate the risk associated with terror appropriately. This is what we find. The less educated are more likely to overreact to terrorist acts than more educated individuals. Moreover, and consistent with our theory, the less educated frequent users act as if they evaluate the risk associated with terror almost as accurately as their educated peers and the less educated frequent users respond much less to terrorist attacks than similarly educated occasional users.

How does media coverage of disasters and atrocities affect the public? Using the natural variation in the exposure of the Israeli population to newspapers, we find a large impact of suicide attacks during regular media coverage days, we find almost no impact of bus-related attacks when they are followed by either a holiday or a weekend. Moreover, the large impact of suicide attacks followed by regular weekdays' media coverage is found mainly in the use of bus services by the less educated families - consistent with the view that media coverage tends to have a larger manipulative impact on the less educated - and among occasional users of bus services, who have weaker economic incentives to invest in overcoming fear.

This paper shows that people are both emotional and rational. People both have innate emotional, responses to events, and people have the capacity to control their emotions and limit their over reactions. Terrorism, and other events, can both cause subjective beliefs to deviate widely from objective beliefs, and if people have powerful

incentives, they can rationally choose to invest in controlling fear - or other emotions - and pushing their subjective assessments back toward objective ones. Policy makers and academic research should neither ignore human emotions such as fear, nor human behavior, such as the rational choice to invest in controlling fear.

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Table 1
The Effect of Terror Attacks on the Number of Bus Tickets Purchased

OLS and Poisson Regression Estimates

Variables of Interest	OLS				Poisson			
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
Panel a: Regression estimates								
Buses related incidents during the last week	-0.018*** (0.004)	-0.012*** (0.004)	-0.009** (0.004)	-0.010** (0.004)	-0.090*** (0.012)	-0.064*** (0.012)	-0.054*** (0.012)	-0.057*** (0.012)
Panel b: The change in percentage points								
Average number of tickets (prior to the "Al-Aqsa" Intifada)	0.237	0.237	0.237	0.237	--	--	--	--
The percentage change in the number of bus tickets	**-7.6%**	**-5.1%**	**-3.8%**	**-4.2%**	**-9.0%**	**-6.4%**	**-5.4%**	**-5.7%**
Controlling for:								
Demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Month fixed effects	No	No	Yes	Yes	No	No	Yes	Yes
Day-of-week fixed effects	No	No	Yes	Yes	No	No	Yes	Yes

Notes.
Daily data on the number of single ride tickets purchased by a representative sample of Israeli households for the years 1999 to 2004 are taken from the Israeli Central Bureau of Statistics Expenditures and Income Surveys and its bi-weekly diaries. Data on terror attacks against Israeli targets is taken from the Israeli Ministry of Foreign Affairs. The sample includes households with non-missing demographics whose head of household is 22 to 79 years old.

The dependent variable is the sum of single rides, multiple rides and monthly passes purchased by a household in the surveyed day. The explanatory variable of interest is the total number of bus related terror attacks during the last week (t-7 till t-1). The average number of bus tickets per day prior to the 'Al-Aqsa' Intifada is estimated using data for the period January 1999 to September 2000.

Demographics include age (quartic), 6 education categories, income, ethnic origin, total number of persons and number of children in household, marital status, years in Israel for immigrants (age for Israeli born), a binary indicators for recent immigrants from former USSR and Ethiopia and dummies for locations of residency.

Robust standard errors clustered by week are in parentheses.

* Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 2
The Effect of Terror Attacks on the Number of Bus Tickets Purchased in the Largest Cities and All Other Locations

OLS and Poisson Regression Estimates

	Location of Residence					
	All		The Largest Cities		All Other Locations	
Variables of Interest	OLS	Poisson	OLS	Poisson	OLS	Poisson
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Buses related incidents during the last week	-0.010** (0.004)	-0.057*** (0.012)	-0.019*** (0.007)	-0.085*** (0.016)	-0.003 (0.006)	-0.017 (0.019)
The change in percentage points						
Average number of tickets (prior to the "Al-Aqsa" Intifada)	0.237	--	0.294	--	0.184	--
The percentage change in the number of bus tickets purchased	**-4.2%**	**5.7%**	**-6.5%**	**-8.5%**	**-1.6%**	**-1.7%**
Controlling for:						
Demographics	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Day-of-week fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes.
Daily data on the number of single ride tickets purchased by a representative sample of Israeli households for the years 1999 to 2004 are taken from the Israeli Central Bureau of Statistics Expenditures and Income Surveys and its bi-weekly diaries. Data on terror attacks against Israeli targets is taken from the Israeli Ministry of Foreign Affairs. The sample includes households with non-missing demographics whose head of household is 22 to 79 years old.
We classify Israeli households to those living in the largest cities (i.e., at least 100K inhabitants) and all others. The dependent variable is the sum of single rides, multiple rides and monthly passes purchased by a household in the surveyed day. The explanatory variables of interest is the total number of bus related terror attacks during the last three days (t-3 till t-1) and the past week, two weeks and four weeks respectively. Demographics include age (quartic), 6 education categories, income, ethnic origin, total number of persons and number of children in household, marital status, years in Israel for immigrants (age for Israeli born), a binary indicators for recent immigrants from former USSR and Ethiopia and dummies for locations of residency.
Robust standard errors clustered by week are in parentheses.
* Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 3
The Effect of Terror Attacks on the Number of Bus Tickets Purchased by Time Period

Poisson Regression Estimates

Variables of Interest	Time Period			
	Last Three Days	Last Week	Last Two Weeks	Last Four Weeks
	(i)	(ii)	(iii)	(iv)
Panel a: on average				
Bus related incidents during the period	-0.077*** (0.025)	-0.085*** (0.016)	-0.069*** (0.011)	-0.054*** (0.009)
Panel b: at the margin				
Change in bus related incidents between two consecutive time periods		-0.093*** (0.020)	-0.041*** (0.015)	-0.027** (0.011)
<u>Controlling for:</u>				
Demographics	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes
Day-of-week fixed effects	Yes	Yes	Yes	Yes

Notes.

Daily data on the number of single ride tickets purchased by a representative sample of Israeli households for the years 1999 to 2004 are taken from the Israeli Central Bureau of Statistics Expenditures and Income Surveys and its bi-weekly diaries. Data on terror attacks against Israeli targets is taken from the Israeli Ministry of Foreign Affairs. The sample includes households with non-missing demographics whose head of household is 22 to 79 years old.

The dependent variable is the sum of single rides, multiple rides and monthly passes purchased by a household in the surveyed day. The explanatory variables of interest is the total number of bus related terror attacks during the last three days (t-3 till t-1) and the past week, two weeks and four weeks respectively. Demographics include age (quartic), 6 education categories, income, ethnic origin, total number of persons and number of children in household, marital status, years in Israel for immigrants (age for Israeli born), a binary indicators for recent immigrants from former USSR and Ethiopia and dummies for locations of residency. The table estimates for Israeli households living in cities with at least 100K inhabitants (results for all are available on the online appendix).

Robust standard errors clustered by week are in parentheses.

* Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 4

The Effect of Bus Related and Other Terror Incidents on the Number of Bus Tickets Purchased

Poisson Regression Estimates

Variables of Interest	Incidents During the Last							
	Three Days		One Week		Two Weeks		Four Weeks	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
All terror incidents	-0.013** (0.006)		-0.015*** (0.003)		-0.008*** (0.002)		-0.003*** (0.001)	
Bus related incidents	--	-0.058* (0.030)	--	-0.083*** (0.019)	--	-0.045*** (0.014)	--	-0.040*** (0.010)
All other incidents	--	-0.003 (0.007)	--	-0.010** (0.005)	--	0.002 (0.003)	--	0.003 (0.002)
Number of fatal casualties (in dozens)	--	-0.002 (0.002)	--	0.004 (0.013)	--	-0.003*** (0.001)	--	-0.002*** (0.001)
Controlling for:								
Demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Day-of-week fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes.
Daily data on the number of single ride tickets purchased by a representative sample of Israeli households for the years 1999 to 2004 are taken from the Israeli Central Bureau of Statistics Expenditures and Income Surveys and its bi-weekly diaries. Data on terror attacks against Israeli targets is taken from the Israeli Ministry of Foreign Affairs. The sample includes households with non-missing demographics whose head of household is 22 to 79 years old.
The dependent variable is the sum of single rides, multiple rides and monthly passes purchased by a household in the surveyed day. The explanatory variables of interest is the total number of bus related terror attacks during the relevant time window. Demographics include age (quartic), 6 education categories, income, ethnic origin, total number of persons and number of children in household, marital status, years in Israel for immigrants (age for Israeli born), a binary indicators for recent immigrants from former USSR and Ethiopia and dummies for locations of residency.
Robust standard errors clustered by week are in parentheses.
* Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 5

The Effect of Bus Related Suicide Terror Attacks on the Number of Taxi Rides in the Largest Cities and in All Other Locations

Poisson Regression Estimates

Variables of Interest	Location of Residence		
	All	The Largest Cities	All Other Locations
	(i)	(ii)	(iii)
Mean Dependent Variable (prior to the "Al-Aqsa" Intifada)	0.086*** (0.002)	0.092*** (0.002)	0.079*** (0.003)
Bus related incidents during the last three days	0.013 (0.033)	0.096** (0.047)	-0.038 (0.046)
Controlling for:			
Demographics	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes
Day-of-week fixed effects	Yes	Yes	Yes

Notes.
Daily data on the number of single ride tickets purchased by a representative sample of Israeli households for the years 1999 to 2004 are taken from the Israeli Central Bureau of Statistics Expenditures and Income Surveys and its bi-weekly diaries. Data on terror attacks against Israeli targets is taken from the Israeli Ministry of Foreign Affairs. The sample includes households with non-missing demographics whose head of household is 22 to 79 year old.
We classify Israeli households to those living in the largest cities (i.e., at least 100K inhabitants) and all others. The dependent variable is the sum of taxi rides per household during the surveyed day. The explanatory variable of interest is the total number of bus related terror attacks during the last three days (t-3 till t-1). Demographics include age (quartic), 6 education categories, income, ethnic origin, total number of persons and number of children in household, marital status, years in Israel for immigrants (age for Israeli born), a binary indicators for recent immigrants from former USSR and Ethiopia and dummies for locations of residency.
Robust standard errors clustered by week are in parentheses.
* Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 6
The Effect of Terror Attacks on the Number of Single-Rides, Multiple-Rides and Monthly Passes

Poisson Regression Estimates

Variables of Interest	Type of Ticket Purchased											
	Single Rides				Multiple-Rides				Monthly Passes			
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)
Buses related incidents during the last three days	-0.079*** (0.026)				-0.046 (0.109)				0.354 (0.233)			
Buses related incidents during the last week		-0.086*** (0.016)				-0.006 (0.065)				-0.001 (0.192)		
Buses related incidents during the last two weeks			-0.080*** (0.012)				0.014 (0.048)				0.153* (0.084)	
Bus related incidents during the last four week				-0.059*** (0.009)				-0.014 (0.037)				0.080 (0.076)
Controlling for:												
Demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Day fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes.
Daily data on the number of single ride tickets purchased by a representative sample of Israeli households for the years 1999 to 2004 are taken from the Israeli Central Bureau of Statistics Expenditures and Income Surveys and its bi-weekly diaries. Data on terror attacks against Israeli targets is taken from the Israeli Ministry of Foreign Affairs. The sample includes households with non-missing demographics whose head of household is 22 to 79 years old.
The dependent variables are the number single rides, multiple rides and monthly passes purchased by a household in the surveyed day. The explanatory variable of interest is the total number of bus related terror attacks during the last three days (t-3 till t-1) the last week, the last two weeks and the last four weeks respectively.
Demographics include age (quartic), 6 education categories, income, ethnic origin, total number of persons and number of children in household, marital status, years in Israel for immigrants (age for Israeli born), a binary indicators for recent immigrants from former USSR and Ethiopia and dummies for locations of residency. The table estimates for Israeli households living in cities with at least 100K inhabitants (results for all are available on the online appendix).
Robust standard errors clustered by week are in parentheses.
* Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 7

Price Elasticity of Bus Rides: Single-Rides, Multiple-Rides and Monthly Passes Purchased between January 1999 and September 2000

Poisson Regression Estimates

Variables of Interest	Dependent variable: Number of Bus Tickets Purchased					
	Single-Ride Tickets		Multiple-Rides Tickets		Monthly Passes	
	All	The Largest Cities	All	The Largest Cities	All	The Largest Cities
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Price (in logs) imputed using the average price ticket by location and quarter	-0.232*** (0.021)	-0.239*** (0.029)	-0.958*** (0.056)	-0.432*** (0.129)	-1.236*** (0.337)	-1.380*** (0.518)
Controlling for:						
Demographics	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Day fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Day-of-year-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes.

Daily data on the number of single ride tickets purchased by a representative sample of Israeli households for the period between January 1999 and September 2000, prior to the "Al-Aqsa" intifada, are taken from the Israeli Central Bureau of Statistics Expenditures and Income Surveys and its bi-weekly diaries. Data on terror attacks against Israeli targets is taken from the Israeli Ministry of Foreign Affairs. The sample includes households with non-missing demographics whose head of household is 22 to 79 years old. We classify Israeli households to those living in the largest cities (i.e., at least 100K inhabitants) and all others.
Price tickets are reported only by households who purchased a ticket. Therefore we impute bus tickets' prices using the average reported single ride, multiple rides and monthly passes prices by year and quarter for each location of residency in the Israeli Central Bureau of Statistics Expenditures and Income Surveys.
The dependent variables are the number single rides, multiple rides and monthly passes purchased by a household in the surveyed day. Demographics include age (quartic), income, 6 education categories, ethnic origin, total number of persons and number of children in household, marital status, years in Israel for immigrants (age for Israeli born), a binary indicators for recent immigrants from former USSR and Ethiopia and dummies for locations of residency.
Robust standard errors clustered by week are in parentheses.
* Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 8
The Effect of Terror Attacks on the Number of Single-Ride Tickets Purchased by Private Car Ownership

Poisson Regression Estimates

Variables of Interest	Have at least One Car		Difference
	No	Yes	(ii) - (i)
	(i)	(ii)	(iii)
Panel a: Single-Ride Tickets Prior to "Al Aqsa" Intifada (01/1999 - 9/2000)			
Average number of single ride tickets per day	0.397*** (0.011)	0.188*** (0.006)	-0.209*** (0.011)
Panel b: The Effect of Suicide Attacks on Single-Ride Tickets per Day			
Buses related incidents during the last three days	-0.025 (0.050)	-0.160*** (0.049)	-0.136* (0.070)
Buses related incidents during the last week	0.016 (0.031)	-0.173*** (0.030)	-0.189*** (0.043)
Buses related incidents during the last two weeks	-0.058** (0.024)	-0.157*** (0.022)	-0.099*** (0.033)
Panel c: Price Elasticity. Single-Ride Tickets Prior to "Al Aqsa" Intifada (01/1999 - 9/2000)			
Price (in logs) imputed using the average price tickets in the same week	-0.341*** (0.042)	-0.166*** (0.040)	0.175*** (0.058)
<u>Controlling for:</u>			
Demographics	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes
Day fixed effects	Yes	Yes	Yes

Notes.
Daily data on the number of single ride tickets purchased by a representative sample of Israeli households for the years 1999 to 2004 are taken from the Israeli Central Bureau of Statistics Expenditures and Income Surveys and its bi-weekly diaries. Data on terror attacks against Israeli targets is taken from the Israeli Ministry of Foreign Affairs. To exclude potential recent car owners we restrict the sample to head of households 30 years of age. We control for potential selection among the elderly by excluding head of households 66 years of age and older.

The dependent variables are the number single rides, multiple rides and monthly passes purchased by a household in the surveyed day. The explanatory variable of interest is the total number of bus related terror attacks during the last three days (t-3 till t-1) the past week and the past two weeks respectively.

Demographics include age (quartic), 6 education categories, income, ethnic origin, total number of persons and number of children in household, marital status, years in Israel for immigrants (age for Israeli born), a binary indicators for recent immigrants from former USSR and Ethiopia and dummies for locations of residency. The table estimates for Israeli households living in cities with at least 100K inhabitants (results for all are available on the online appendix).

Robust standard errors clustered by week are in parentheses.

* Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 9
The Effect of Terror Attacks on the Number of Single-Ride Tickets Purchased by 'Frequent' and 'Occasional' Bus Users

Poisson Regression Estimates

Variables of Interest	Single-Ride's Ticket Purchasers		
	'Occasional'	'Frequent'	Difference
	less than one ticket per person	one ticket or more	(i)-(ii)
	(i)	(ii)	(iii)
Panel a: by actual number of single-ride tickets, all locations			
Buses related incidents during the last three days	-0.258** (0.105)	-0.033 (0.044)	-0.225** (0.114)
Buses related incidents during the last week	-0.237*** (0.072)	-0.075** (0.031)	-0.162** (0.078)
Buses related incidents during the last two weeks	-0.251*** (0.063)	-0.045* (0.026)	-0.211*** (0.068)
Panel b: by actual number of single-ride tickets, largest cities			
Buses related incidents during the last three days	-0.217 (0.132)	-0.043 (0.054)	-0.174 (0.143)
Buses related incidents during the last week	-0.307*** (0.098)	-0.099** (0.038)	-0.209** (0.105)
Buses related incidents during the last two weeks	-0.450*** (0.091)	-0.052 (0.033)	-0.401*** (0.096)
Panel c: by projected number of single-ride tickets, largest cities			
Buses related incidents during the last three days	-0.108* (0.057)	0.046 (0.112)	-0.154 (0.125)
Buses related incidents during the last week	-0.191*** (0.042)	-0.030 (0.068)	-0.162** (0.081)
Buses related incidents during the last two weeks	-0.148*** (0.037)	-0.003 (0.059)	-0.146** (0.070)
Controlling for:			
Demographics	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes
Day fixed effects	Yes	Yes	Yes

Notes.
Daily data on the number of single ride tickets purchased by a representative sample of Israeli households for the years 1999 to 2004 are taken from the Israeli Central Bureau of Statistics Expenditures and Income Surveys and its bi-weekly diaries. Data on terror attacks against Israeli targets is taken from the Israeli Ministry of Foreign Affairs. The sample includes households with non-missing demographics whose head of household is 22 to 79 years old. We disaggregate the population sample by number of bus tickets purchased prior to suicide attacks into regular and irregular users. We use a sub-sample of households that were not exposed to suicide attacks during the first 3

weekdays in the sample or during the week before that. We exclude households that did not purchase at least one bus-line ticket during the first three weekdays of the survey. We divide the sub-population sample by the number of tickets purchased during the first three weekdays surveyed into two groups: (i) those who purchased less than one single-ride ticket per household member and (ii) those who purchased one single-ride ticket or more. We use households' demographic characteristics, including car ownership, to project whether a household belongs to the frequent or the occasional users category. All specifications were estimated using data taken from the 4th to the 14th days of the bi-weekly diary.

The dependent variables are the number single rides, multiple rides and monthly passes purchased by a household in the surveyed day. The explanatory variable of interest is the total number of bus related terror attacks during the last three days (t-3 till t-1) the past week and the past two weeks respectively. Demographics include age (quartic), 6 education categories, income, ethnic origin, total number of persons and number of children in household, marital status, years in Israel for immigrants (age for Israeli born), a binary indicators for recent immigrants from former USSR and Ethiopia and dummies for locations of residency.

Robust standard errors clustered by week are in parentheses.

* Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 10

The Effect of Suicide Terror Attacks on Daily Visits to Restaurants and Coffee Shops and Spending of 25 to 40 Years Old by Marital Status

<u>*Poisson Regression Estimates*</u>

Variables of Interest	All	By Marital Status		
		Single	Married (without Children)	Difference (iii)-(ii)
	(i)	(ii)	(iii)	(iv)
Panel a: the average number of visits prior to the "Al-Aqsa" Intifada				
Mean Dependent Variable	0.293*** (0.010)	0.302*** (0.013)	0.277*** (0.016)	-0.025 (0.021)
Panel b: Poisson Estimates				
Suicide bomber attacks during the last three days	-0.095* (0.055)	-0.026 (0.064)	-0.287*** (0.108)	-0.261** (0.121)
Suicide bomber attacks during the last week	-0.033 (0.033)	0.013 (0.039)	-0.150** (0.063)	-0.164** (0.078)
Suicide bomber attacks during the last two weeks	-0.031 (0.028)	-0.031 (0.028)	-0.029 (0.040)	0.003 (0.048)
<u>*Controlling for:*</u>				
Demographics	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes
Day fixed effects	Yes	Yes	Yes	Yes

Notes.

Daily data on the number of visits and expenditures in restaurants pubs and coffee by a representative sample of Israeli households for the years 1999 to 2004 are taken from the Israeli Central Bureau of Statistics Expenditures and Income Surveys and its bi-weekly diaries. Data on terror attacks against Israeli targets and the corresponding by day for the years 1999 to 2004 is taken from the Israeli Ministry of Foreign Affairs. To isolate the effects of age, religion and location, we restrict the sample to Jewish head of households who are between the ages of 25 to 40, without children who live in one of the major cities within the 1967 borders (including the Jewish neighborhoods outside of the 1967 borders in Jerusalem). We further exclude singles from cohabitating unions by restricting the sample to singles that live on their own.

The dependent variable is the number of visits to café, restaurants and pubs during the survey. The explanatory variables of interest are the total number of suicide attacks during the last three days (t-3 till t-1) the past week and the past two weeks respectively. Demographics include age (quartic), 6 education categories, income, ethnic origin, total number of persons and number of children in household, marital status, years in Israel for immigrants (age for Israeli born), and binary indicators for recent immigrants from former USSR and Ethiopia. The table estimates for Israeli households living in cities with at least 100K inhabitants (results for all are available on the online appendix).

Robust standard errors clustered by week are in parentheses.

* Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 11
The Effect of Suicide Terror Attacks on the Number of Daily Visits to Coffee Shops Restaurants and Pubs by 'Frequent' and 'Occasional' Bus Users

Poisson Regression Estimates

Variables of Interest	Single-Ride's Ticket Purchasers: 'Frequent' and 'Occasional' Users					
	Actual Number of Tickets			Projected Number of Tickets		
	Less than one ticket	One ticket or more	Difference (i)-(ii)	Less than one ticket	One ticket or more	Difference (iv)-(v)
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Panel a: the average number of visits prior to the "Al-Aqsa" Intifada						
'Crude'	0.140***	0.147***	0.007	0.111***	0.153***	-0.041***
	(0.008)	(0.006)	(0.010)	(0.010)	(0.005)	(0.011)
'Residual'			0.018			-0.019
			(0.013)			(0.013)
Panel b: Poisson Estimates						
Café related attack during the last three days	-0.722**	-0.094	-0.628**	-0.367***	0.191	-0.558*
	(0.289)	(0.137)	(0.320)	(0.142)	(0.271)	(0.306)
Café related attack during the last week	-0.187	-0.037	-0.150	-0.126	0.128	-0.254
	(0.150)	(0.084)	(0.172)	(0.082)	(0.192)	(0.208)
Café related attack during the last two weeks	-0.089	0.097*	-0.186	0.054	0.172	-0.118
	(0.106)	(0.055)	(0.119)	(0.053)	(0.151)	(0.160)
Controlling for:						
Demographics	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Day fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes.
Daily data on the number of single ride tickets purchased by a representative sample of Israeli households for the years 1999 to 2004 are taken from the Israeli Central Bureau of Statistics Expenditures and Income Surveys and its bi-weekly diaries. Data on terror attacks against Israeli targets is taken from the Israeli Ministry of Foreign Affairs. The sample includes households with non-missing demographics whose head of household is 22 to 79 years old. We disaggregate the population sample by number of bus tickets purchased prior to suicide attacks into regular and irregular users. We use a sub-sample of households that were not exposed to suicide attacks during the first 3 weekdays in the sample or during the week before that. We exclude households that did not purchase at least one bus-line ticket during the first three weekdays of the survey. We divide the sub-population sample by the number of tickets purchased during the first three weekdays surveyed into two groups: (i) those who purchased less than one single-ride ticket per household member and (ii) those who purchased one single-ride ticket or more. We use households' demographic characteristics, including car ownership, to project whether a household belongs to the frequent or the occasional users category. All specifications were estimated using data taken from the 4th to the 14th days of the bi-weekly diary.
The dependent variable is the number of visits to café, restaurants and pubs during the survey. The explanatory variables of interest are the total number of suicide attacks during the last three days (t-3 till t-1) the past week and the past two weeks respectively. Demographics include age (quartic), 6 education categories, income, ethnic origin, total number of persons and number of children in household, marital status, years in Israel for immigrants (age for Israeli born), and binary indicators for recent immigrants from former USSR and Ethiopia. The table estimates for Israeli households living in cities with at least 100K inhabitants.
Robust standard errors clustered by week are in parentheses.
* Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 12
The Effect of Terror Attacks on the Number of Single-Ride Bus Tickets by Education

Poisson Regression Estimates

Variables	High School (or less)				At Least Some College				Differences
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)
Buses related incidents during the last three days	-0.077** (0.032)				-0.069 (0.045)				-0.008 (0.055)
Buses related incidents during the last week		-0.111*** (0.021)				-0.027 (0.027)			-0.084** (0.034)
Buses related incidents during the last two weeks			-0.088*** (0.015)				-0.055*** (0.020)		-0.033 (0.025)
Bus related incidents during the last four week				-0.074*** (0.011)				-0.032** (0.015)	-0.041** (0.019)
Controlling for:									
Demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Day fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes.
Daily data on the number of single ride tickets purchased by a representative sample of Israeli households for the years 1999 to 2004 are taken from the Israeli Central Bureau of Statistics Expenditures and Income Surveys and its bi-weekly diaries. Data on terror attacks against Israeli targets is taken from the Israeli Ministry of Foreign Affairs. The sample includes households with non-missing demographics whose head of household is 22 to 79 years old. We disaggregate the sample according to the head of household's education into two groups: (i) households where the head has some college education or more and (ii) all the others.
The dependent variables are the number single-ride tickets purchased by a household in the surveyed day. The explanatory variable of interest is the total number of bus related terror attacks during the last three days (t-3 till t-1) the past week and the past two and four weeks respectively. Demographics include age (quartic), 6 education categories, income, ethnic origin, total number of persons and number of children in household, marital status, years in Israel for immigrants (age for Israeli born), a binary indicators for recent immigrants from former USSR and Ethiopia and dummies for locations of residency. The table estimates for Israeli households living in cities with at least 100K inhabitants (results for all are available on the online appendix).
Robust standard errors clustered by week are in parentheses
* Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 13
The Effect of Terror Attacks on the Number of Single-Ride Tickets by Purchased by Education and Frequency of Bus Usage

Poisson Regression Estimates

Variables of Interest	Single-Ride Tickets Purchasers		
	All	**'Occasional'**	**'Frequent'**
	at leat one ticket	less than one ticket per person	one ticket per person or more
	(i)	(ii)	(iii)
Panel a: three days after			
Buses related incidents	-0.123*	-0.336*	-0.039
	(0.066)	(0.176)	(0.072)
Buses related incidents * at least some college	0.119	0.299	-0.009
	(0.099)	(0.264)	(0.107)
Bus related for some college or more	-0.004	-0.037	-0.048
	(0.075)	(0.198)	(0.080)
Panel b: one week later			
Buses related incidents	-0.213***	-0.515***	-0.101*
	(0.049)	(0.135)	(0.054)
Buses related incidents * at least some college	0.159**	0.494***	0.004
	(0.070)	(0.192)	(0.075)
Bus related for some college or more	-0.053	-0.021	-0.096*
	(0.050)	(0.139)	(0.054)
Panel c: two weeks later			
Buses related incidents	-0.176***	-0.643***	-0.045
	(0.042)	(0.121)	(0.045)
Buses related incidents * at least some college	0.145**	0.499***	-0.013
	(0.060)	(0.178)	(0.064)
Bus related for some college or more	-0.031	-0.145	-0.058
	(0.044)	(0.134)	(0.046)
<u>***Controlling for:***</u>			
Demographics	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes
Day fixed effects	Yes	Yes	Yes

Notes.
Daily data on the number of single ride tickets purchased by a representative sample of Israeli households for the years 1999 to 2004 are taken from the Israeli Central Bureau of Statistics Expenditures and Income Surveys and its bi-weekly diaries. Data on terror attacks against Israeli targets is taken from the Israeli Ministry of Foreign Affairs. The sample includes households with non-missing demographics whose head of household is 22 to 79 years old. We disaggregate the population sample by number of bus tickets purchased prior to suicide attacks into regular and irregular users. We use a sub-sample of households that were not exposed to suicide attacks during the first 3 weekdays in the sample or during the week before that. We exclude households that did not purchase at least one bus-line ticket during the first three weekdays of the survey. We divide the sub-population sample by the number of tickets purchased during the first three weekdays surveyed into two groups: (i) those who purchased less than one single-ride ticket per household member and (ii) those who purchased one single-ride ticket or more. We use households' demographic characteristics, including car ownership, to project whether a household belongs to the frequent or the occasional users category. We

disaggregate the sample according to the head of household's education into (i) households where the head has some college education or more and (ii) all the others. All specifications were estimated using data taken from the 4th to the 14th days of the bi-weekly diary.

The dependent variables are the number single-ride tickets purchased by a household in the surveyed day.

The explanatory variable of interest is the total number of bus related terror attacks during the last three days (t-3 till t-1) the past week and the past two weeks respectively. Demographics include age (quartic), 6 education categories, income, ethnic origin, total number of persons and number of children in household, marital status, years in Israel for immigrants (age for Israeli born), a binary indicators for recent immigrants from former USSR and Ethiopia and dummies for locations of residency. The table estimates for Israeli households living in cities with at least 100K inhabitants (results for all are available on the online appendix).

Robust standard errors clustered by week are in parentheses.

* Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 14
The Effect of Bus Related Attacks on the Number of Single-Ride Bus Tickets Three Days After the Attack: Differentiating by whether the Intervening Days Include Holidays

Poisson Regression Estimates

	The intervening Days		
	All Days	Weekdays Only	Weekends and Holidays
Variables of Interest			
	(i)	(iii)	(v)
Panel a: all			
Number of fatalities in bus related terror attacks three days ago	-0.023*** (0.007)	-0.041*** (0.010)	-0.002 (0.010)
Panel b: locations with 100K and more			
Number of fatalities in bus related terror attacks three days ago	-0.021** (0.009)	-0.047*** (0.013)	0.009 (0.012)
Controlling for:			
Demographics	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes
Day fixed effects	Yes	Yes	Yes

Notes.

Daily data on the number of single ride tickets purchased by a representative sample of Israeli households for the years 1999 to 2004 are taken from the Israeli Central Bureau of Statistics Expenditures and Income Surveys and its bi-weekly diaries. Data on terror attacks against Israeli targets is taken from the Israeli Ministry of Foreign Affairs. The sample includes households with non-missing demographics whose head of household is 22 to 79 years old.

Israeli newspapers are not printed during Saturday (SHABAT) or on holidays. We distinguish between (i) bus related incidents were followed by regular weekdays' media coverage and (ii) bus-related incidents that took place during a weekday either before the weekend (excluding Friday) or before a holiday.

The dependent variables are the number single-ride tickets purchased by a household during a 'regular' weekday in the surveyed day. The explanatory variable of interest is the total number of bus related terror attacks three days ago. Demographics include age (quartic), 6 education categories, income, ethnic origin, total number of persons and number of children in household, marital status, years in Israel for immigrants (age for Israeli born), a binary indicators for recent immigrants from former USSR and Ethiopia and dummies for locations of residency.

Robust standard errors clustered by week are in parentheses.

* Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 15
The Effect of Bus Related Attacks on the Number of Single-Ride Bus Tickets Three Days After the Attack: Differentiating by Education and whether the Intervening Days Include Holidays

Poisson Regression Estimates

Variables of Interest	High School Graduates (or less)			Some College (or more)		
	All Days	Weekdays Only	Weekends and Holidays	All Days	Weekdays Only	Weekends and Holidays
	(i)	(iii)	(v)	(i)	(iii)	(v)
Panel a: locations with 100K and more						
Number of fatalities in bus related terror attacks three days ago	-0.029** (0.011)	-0.071*** (0.018)	0.012 (0.015)	-0.005 (0.014)	-0.012 (0.019)	0.006 (0.020)
Panel b: all						
Number of fatalities in bus related terror attacks three days ago	-0.029*** (0.009)	-0.065*** (0.014)	0.002 (0.012)	-0.011 (0.012)	-0.006 (0.015)	-0.009 (0.018)
Controlling for:						
Demographics	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Day fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes.
Daily data on the number of single ride tickets purchased by a representative sample of Israeli households for the years 1999 to 2004 are taken from the Israeli Central Bureau of Statistics Expenditures and Income Surveys and its bi-weekly diaries. Data on terror attacks against Israeli targets is taken from the Israeli Ministry of Foreign Affairs. The sample includes households with non-missing demographics whose head of household is 22 to 79 years old. We disaggregate the sample according to the head of household's education into (i) households where the head has some college education or more and (ii) all the others. All specifications were estimated using data taken from the 4th to the 14th days of the bi-weekly diary.
Israeli newspapers are not printed during Saturday (SHABAT) or on holidays. We distinguish between (i) bus related incidents were followed by regular weekdays' media coverage and (ii) bus-related incidents that took place during a weekday either before the weekend (excluding Friday) or before a holiday.
The dependent variables are the number single-ride tickets purchased by a household during a 'regular' weekday in the surveyed day. The explanatory variable of interest is the total number of bus related terror attacks three days ago.
Demographics include age (quartic), 6 education categories, income, ethnic origin, total number of persons and number of children in household, marital status, years in Israel for immigrants (age for Israeli born), a binary indicators for recent immigrants from former USSR and Ethiopia and dummies for locations of residency.
Robust standard errors clustered by week are in parentheses.
* Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 16
The Effect of Bus Related Attacks on the Number of Single-Ride Bus Tickets Three Days After the Attack: Differentiating by Car Ownership and whether the Intervening Days Include Holidays

Poisson Regression Estimates

Variables of Interest	Car owners			No car		
	All Days	Weekdays Only	Weekends and Holidays	All Days	Weekdays Only	Weekends and Holidays
	(i)	(ii)	(iii)	(v)	(vi)	(vii)
Panel a: locations with 100K and more						
Number of fatalities in bus related terror attacks three days ago	-0.026* (0.013)	-0.077*** (0.021)	0.022 (0.017)	-0.019* (0.011)	-0.025 (0.016)	-0.002 (0.016)
Panel b: all						
Number of fatalities in bus related terror attacks three days ago	-0.025** (0.010)	-0.057*** (0.016)	0.006 (0.014)	-0.022** (0.009)	-0.029** (0.014)	-0.007 (0.013)
Controlling for:						
Demographics	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Day fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes.

Daily data on the number of single ride tickets purchased by a representative sample of Israeli households for the years 1999 to 2004 are taken from the Israeli Central Bureau of Statistics Expenditures and Income Surveys and its bi-weekly diaries. Data on terror attacks against Israeli targets is taken from the Israeli Ministry of Foreign Affairs. The sample includes households with non-missing demographics whose head of household is 22 to 79 years old. We divide the population sample to households who own at least one car, 'car owners', and to all others. We estimate the impact of bus-related attacks on the number of single-ride tickets purchased per day among car owners and among all others. To exclude potential recent car owners we restrict the sample to head of households 30 years of age. We control for potential selection among the elderly by excluding head of households 66 and older.

Israeli newspapers are not printed during Saturday (SHABAT) or on holidays. We distinguish between (i) bus related incidents were followed by regular weekdays' media coverage and (ii) bus-related incidents that took place during a weekday either before the weekend (excluding Friday) or before a holiday.

The dependent variables are the number single-ride tickets purchased by a household during a 'regular' weekday in the surveyed day. The explanatory variable of interest is the total number of bus related terror attacks three days ago.

Demographics include age (quartic), 6 education categories, income, ethnic origin, total number of persons and number of children in household, marital status, years in Israel for immigrants (age for Israeli born), a binary indicators for recent immigrants from former USSR and Ethiopia and dummies for locations of residency.

Robust standard errors clustered by week are in parentheses.

* Significant at 10%; ** significant at 5%; *** significant at 1%.

Figure 1. Index of Air Passengers Air Freight Ratios
Domestic Air Seat and Passenger Miles and Air Freight Ton-Miles (monthly data, not seasonally adjusted)
1997 = 100.0

Index: 1997=100.0

Index
Average before Sep 11th 2001
Average after Sep 11th 2001
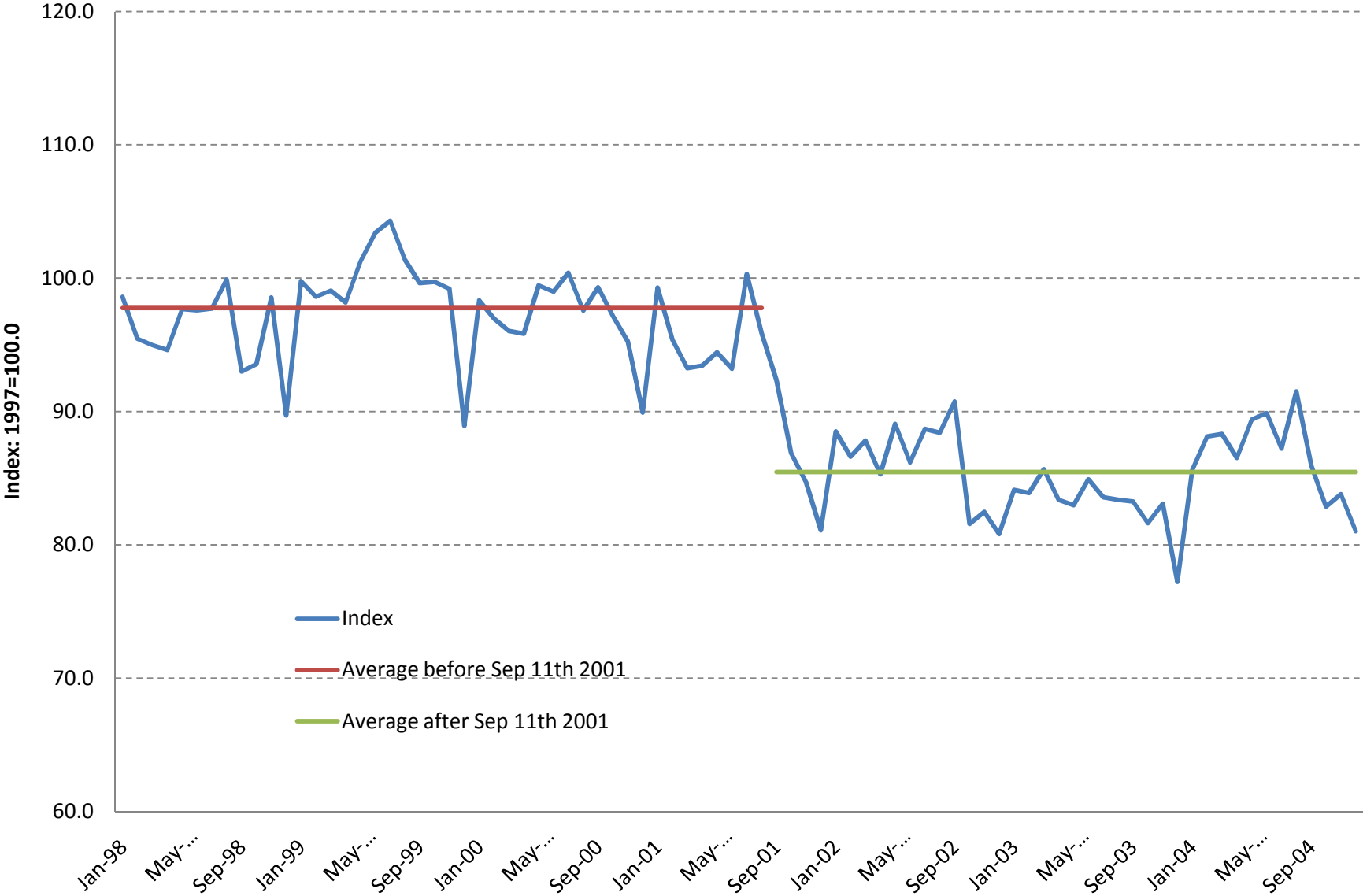
Figure 2. Tourist Arrivals to Israel and Israeli Fatal Casualties from Terror Attacks

Figure 2 draws tourist arrivals to Israel (in thousands) and the number of Israelis killed in terror attacks between 1995 and 2005.
Data on tourist arrivals are taken from the Israeli Central Bureau of Statistics.
Data on Israelis casualties due to terror attacks are taken from the Israeli Ministry of Foreign Affairs
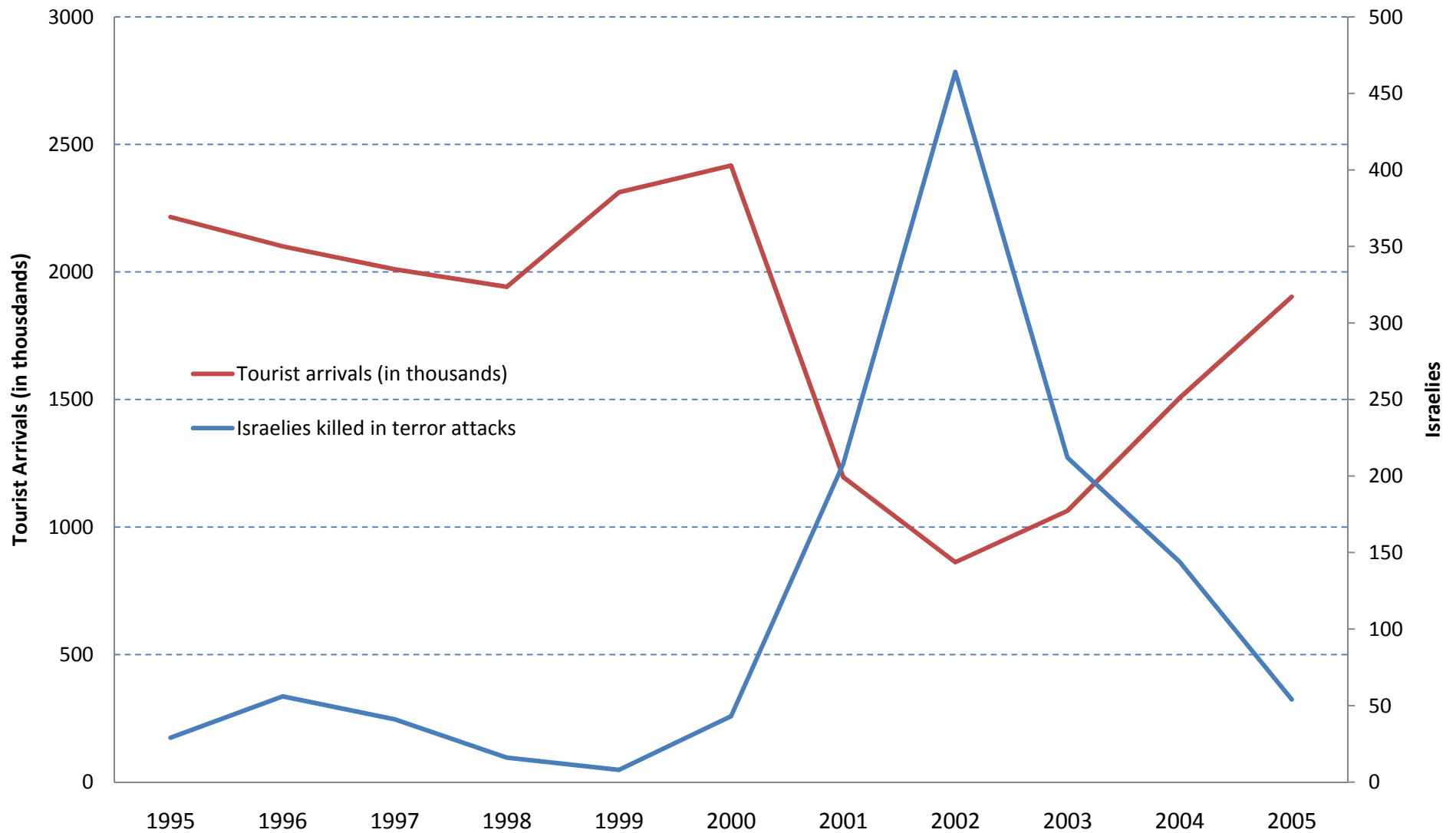
Figure 3. Road Accidents and Terror Attacks Fatal Casualties, Israel 2000-2005

Figure 3 reports the number fatal casualties in road accident and the number of Israelis killed in terror attacks between 2000 and 2005.
Data on road accidents are taken from the Israeli Central Bureau of Statistics.
Data on Israelis casualties due to terror attacks are taken from the Israeli Ministry of Foreign Affairs .

Legend:
- Road accidents' casualties
- Israelies killed by terror attacks
- Israeli civilians killed by terror attacks
- Israeli civilians killed by terror attacks within the 1967 borders

Figure 4. Israeli Fatal Casualties by Type of Attack During the "Al Aqsa" Intifada

Figure 4 draws the number of Israelis killed in terror attacks between 2000 and 2005.
Data on Israelis casualties due to terror attacks are taken from the Israeli Ministry of Foreign Affairs

Figure 5. Revenues from Trips on Regular Lines and Casualties in Suicide Bomber Attacks on Buses, Israel, 2000 to 2005

Data Appendix Table 1. List of the 20 Most Fatal Terror Attacks Against Israeli Targets During the "Al Aqsa" Intifada

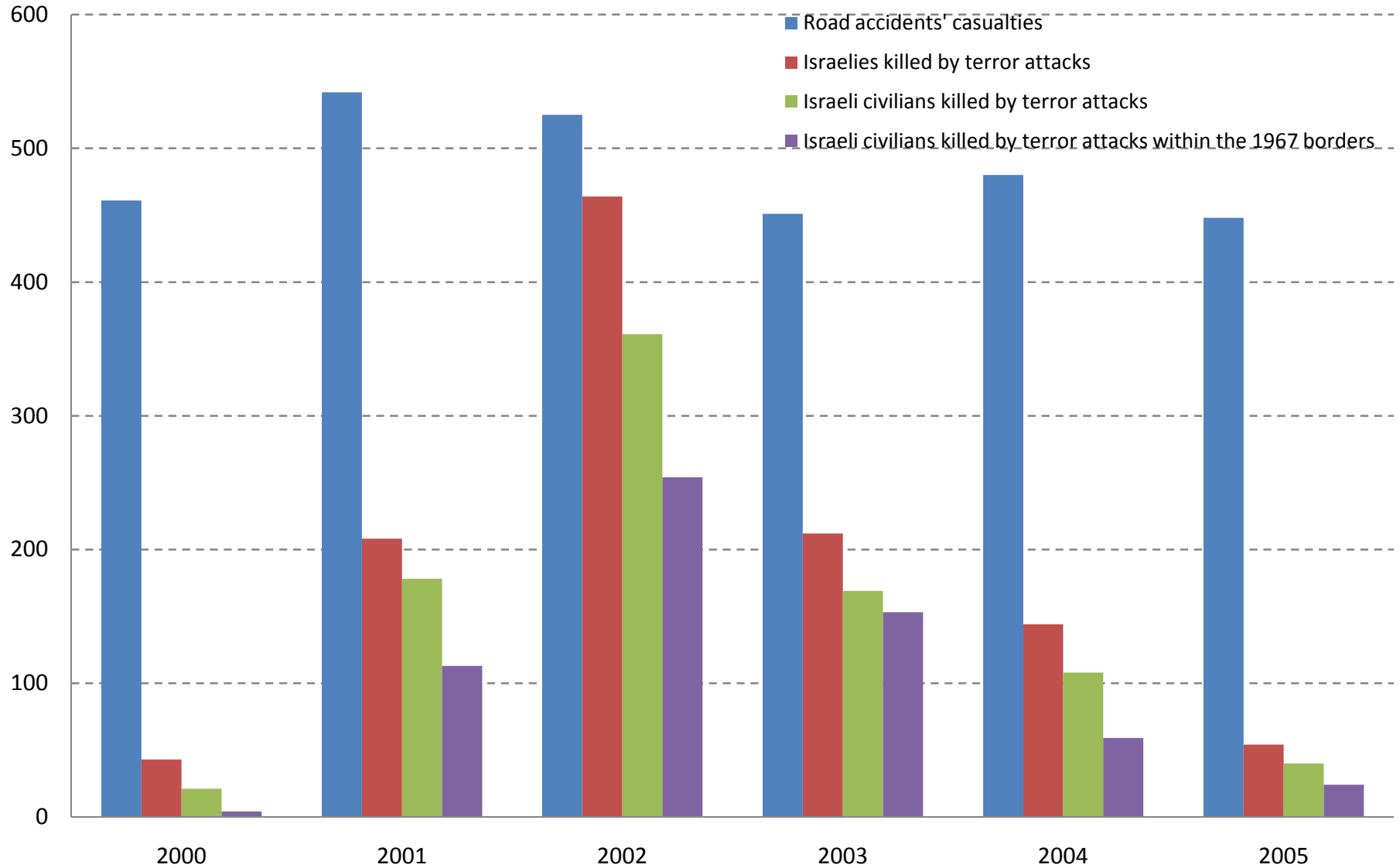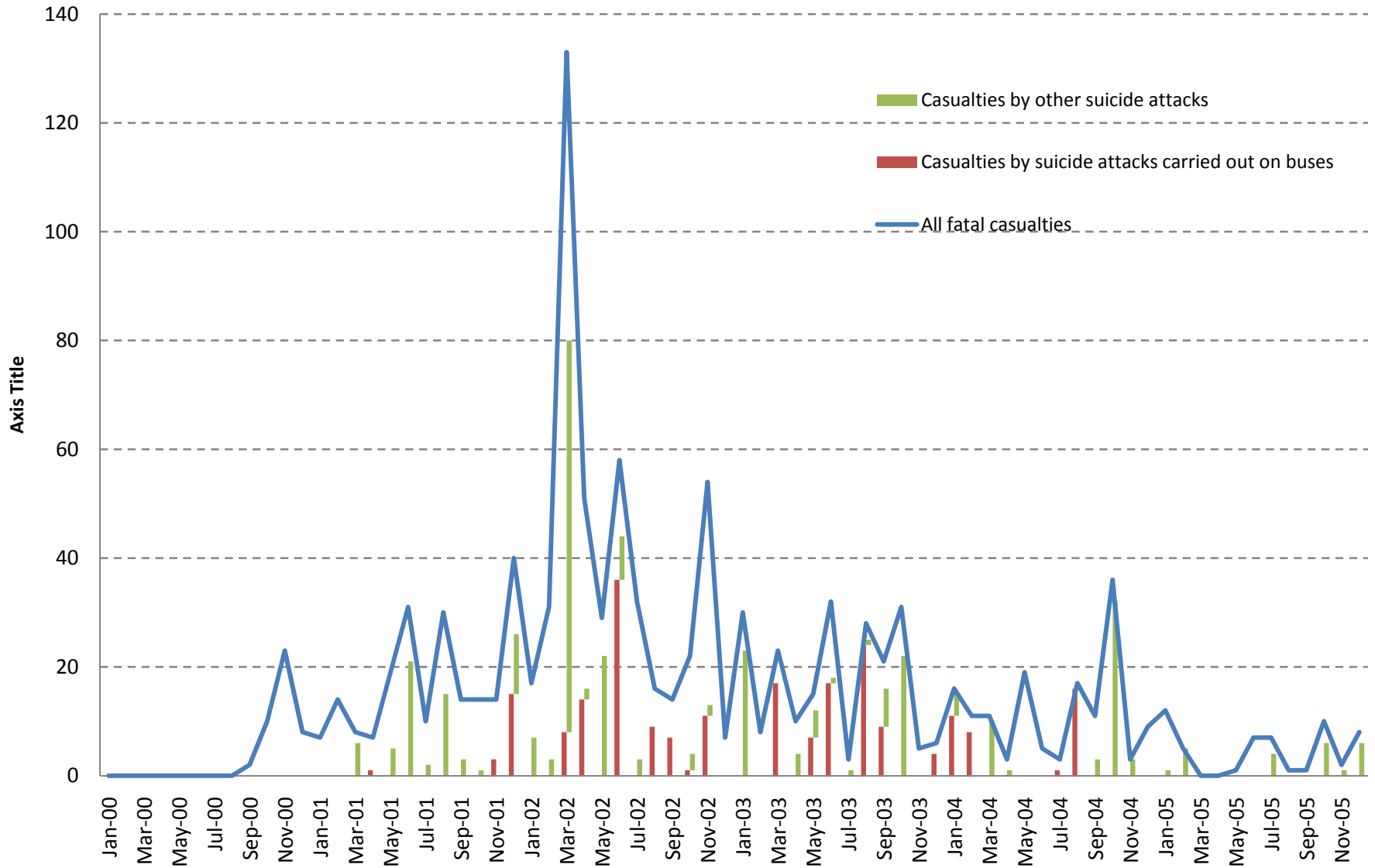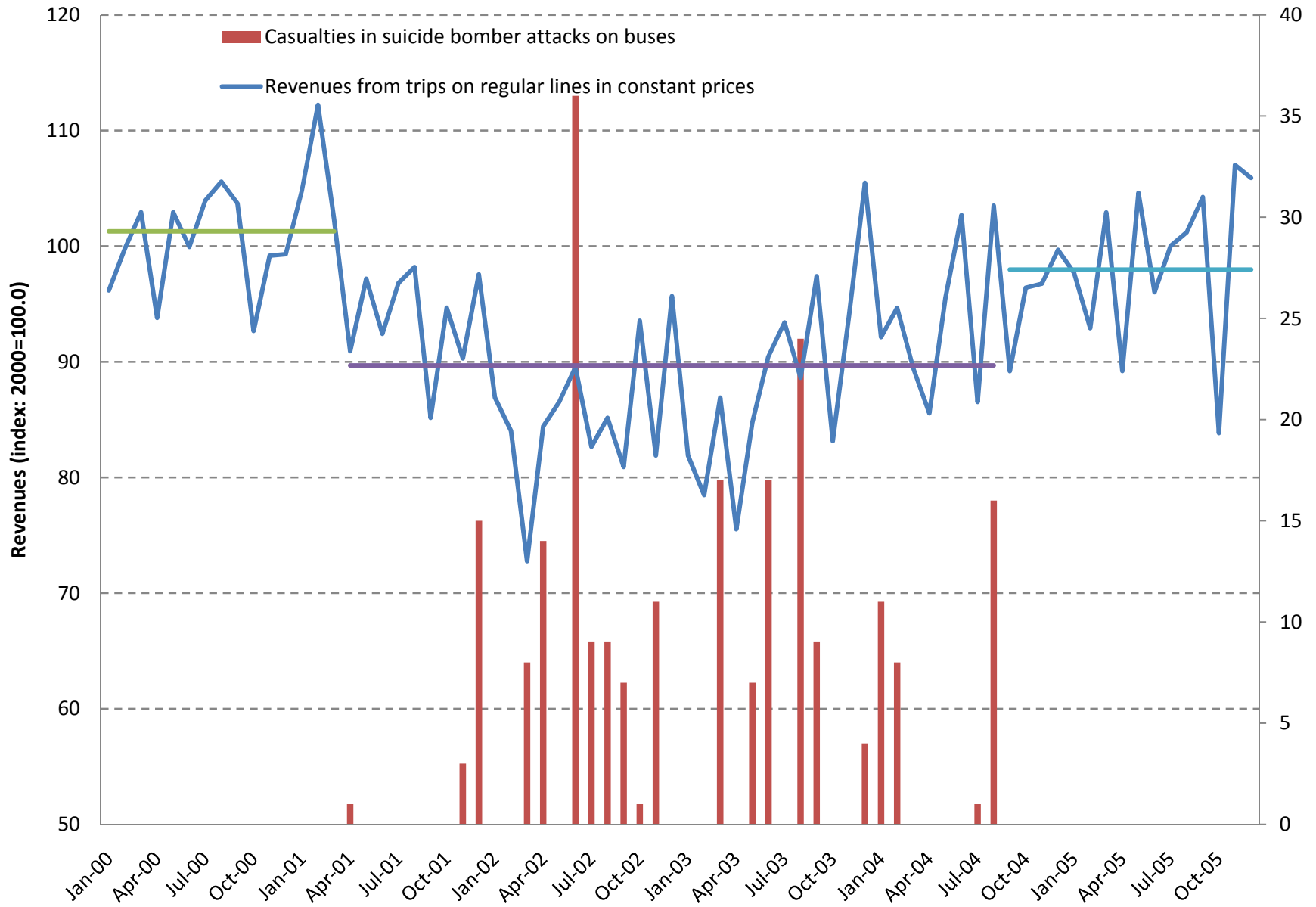| Date			Victims and the Type of Terror Attack
Year	Month	Day	
2002	March	27	30 people were killed and 140 injured - 20 seriously - in a suicide bombing in the Park Hotel in the coastal city of Netanya, in the midst of the Passover holiday seder with 250 guests. Hamas claimed responsibility for the attack.
2003	Jan	5	23 people - 15 Israelis and 8 foreign nationals - were killed and about 120 wounded in a double suicide bombing near the old Central Bus Station in Tel-Aviv. The attack was apparently carried out by two members of the Fatah Al-Aqsa Martyrs Brigades, with the help of the Islamic Jihad.
2003	August	19	23 people were killed and over 130 wounded when a Palestinian suicide bomber detonated himself on a No. 2 Egged bus in Jerusalem's Shmuel Hanavi neighborhood. Hamas claimed responsibility for the attack.
2001	June	1	21 people were killed and about 120 were wounded when a suicide bomber blew himself outside a disco near Tel Aviv's Dolphinarium along the seafront promenade just before midnight on Friday.
2003	Oct	4	21 people were killed, including four children, and 60 wounded in a suicide bombing carried out by a female terrorist from Jenin in the Maxim restaurant in Haifa. The Islamic Jihad claimed responsibility for the attack.
2002	June	18	19 people were killed and 74 were injured - six seriously - in a suicide bombing at the Patt junction in Egged bus no. 32A traveling from Gilo to the center of Jerusalem. The bus, which was completely destroyed, was carrying many students on their way to school. Hamas claimed responsibility for the attack.
2003	March	5	17 people were killed and 53 wounded in a suicide bombing of an Egged bus #37 on Moriah Blvd. in the Carmel section of Haifa, en route to Haifa University. Hamas claimed responsibility for the attack.
2002	June	5	17 people were killed and 38 injured when a car packed with a large quantity of explosives struck Egged bus No. 830 traveling from Tel-Aviv to Tiberias at the Megiddo junction near Afula. The bus, which burst into flames, was completely destroyed. The terrorist, who drove the car bomb, was killed in the blast. The Islamic Jihad claimed responsibility for the attack.
2003	June	11	17 people were killed and over 100 wounded in a suicide bombing on Egged bus #14A outside the Klal building on Jaffa Road in the center of Jerusalem. Hamas claimed responsibility for the attack.

Date			Victims and the Type of Terror Attack
Year	Month	Day	
2004	August	31	16 people were killed and 100 wounded in two suicide bombings within minutes of each other on two Beersheba city buses, on route nos. 6 and 12. The buses were traveling along Beersheba's main street, Rager Blvd, near the city hall. Hamas in Hebron claimed responsibility for the attack.
2001	Dec	2	15 people were killed and 40 injured in a suicide bombing on an Egged bus No. 16 in Haifa shortly after 12:00. Hamas claimed responsibility for the attack.
2001	August	9	15 people were killed and about 130 injured in a suicide bombing at the Sbarro pizzeria on the corner of King George Street and Jaffa Road in the center of Jerusalem. Hamas and the Islamic Jihad claimed responsibility for the attack.
2002	March	31	15 people were killed and over 40 injured in a suicide bombing in Haifa, in the Matza restaurant of the gas station near the Grand Canyon shopping mall. Hamas claimed responsibility for the attack.
2002	May	7	15 people were killed and 55 wounded in a crowded game club in Rishon Lezion, southeast of Tel-Aviv, when a suicide bomber detonated a powerful charge in the 3rd floor club, causing part of the building to collapse. Hamas claimed responsibility for the attack.
2002	Oct	21	14 people were killed and some 50 wounded when a car bomb containing about 100 kilograms of explosives was detonated next to a No. 841 Egged bus from Kiryat Shmona to Tel-Aviv, while traveling along Wadi Ara on Route No. 65 toward Hadera. The bus had pulled over at a bus stop when the suicide bomber, from Jenin, driving a jeep, approached from behind and exploded. The Islamic Jihad claimed responsibility for the attack.
2002	Nov	15	12 people - 9 soldiers and three civilians from the Kiryat Arba emergency response team - were killed and 15 others wounded Friday night in Hebron when Palestinian terrorists opened fire and threw grenades at a group of Jewish worshipers and their guards as they were walking home from Sabbath prayers at the Cave of the Patriarchs. The dead included civilian worshipers and soldiers, some of whom were caught in an ambush as they pursued the attackers. Three terrorists were killed in the attack, which was claimed by the Islamic Jihad
2002	March	9	11 people were killed and 54 injured, 10 of them seriously, when a suicide bomber exploded at 22:30 PM Saturday night in a crowded cafe at the corner of Aza and Ben-Maimon streets in the Rehavia neighborhood in the center of Jerusalem. Hamas claimed responsibility for the attack.

Date			Victims and the Type of Terror Attack
Year	**Month**	**Day**	
2002	Nov	21	11 people were killed and some 50 wounded by a suicide bomber on a No. 20 Egged bus on Mexico Street in the Kiryat Menahem neighborhood of Jerusalem. The bus was filled with passengers, including schoolchildren, traveling toward the center of the city during rush hour. Hamas claimed responsibility for the attack.
2002	March	2	11 people were killed and over 50 were injured, 4 critically, in a suicide bombing at 19:15 on Saturday evening near a yeshiva in the ultra-Orthodox Beit Yisrael neighborhood in the center of Jerusalem where people had gathered for a bar-mitzva celebration. The terrorist detonated the bomb next to a group of women waiting with their baby carriages for their husbands to leave the nearby synagogue. The Fatah Al-Aqsa Martyrs Brigade took responsibility for the attack.
2001	Dec	12	11 people were killed when three terrorists attacked a No. 189 Dan bus and several passenger cars with a roadside bomb, anti-tank grenades, and light arms fire near the entrance to Emmanuel in Samaria at 18:00 P.M. About 30 others were injured. Both Fatah and Hamas claimed responsibility for the attack.
2004	Jan	29	11 people were killed and over 50 wounded, 13 of them seriously, in a suicide bombing of an Egged bus no. 19 at the corner of Gaza and Arlozorov streets in Jerusalem. Both the Fatah-related Al Aqsa Martyrs' Brigades and Hamas claimed responsibility for the attack, naming the bomber as Ali Yusuf Jaara, a 24-year-old Palestinian policeman from Bethlehem.

Source:

Israeli Ministry of Foreign Affairs.

http://www.mfa.gov.il/MFA/Terrorism-%20Obstacle%20to%20Peace/Palestinian%20terror%20since%202000/Victims

Data Appendix Table 2.

Casualties By Type of Terror (or Violence) During the "Al-Aqsa" Intifada, 2000 to 2005

Type of incident	Incidents	Largest Cities^	Casualties All	Fatal	Injured	Casualties per incident All	Fatal	Injured
Panel a: All								
All	403	18%	5961	1125	4836	15	3	12
Civilians				887	4608			
% of all				79%	95%			
Suicide bomber								
All	80	58%	4292	545	3747	54	7	47
Bus	26	65%	1408	219	1189	54	8	46
Café, Mall (etc.)	21	76%	1567	178	1389	75	8	66
Other	33	39%	1317	148	1169	40	4	35
Booby trap	8	13%	289	47	242	36	6	30
Shooting / snipers	170	8%	745	248	497	4	1	3
Demolition Charge	16	6%	146	39	107	9	2	7
Stabbing	18	33%	20	20	0	1	1	0
Kassam rockets	5	0%	34	9	25	7	2	5
Ambush / kidnapping	29	3%	106	61	45	4	2	2
Infiltrated	16	0%	104	49	55	7	3	3
Military battle	44	0%	171	81	90	4	2	2
Other	17	12%	54	26	28	3	2	2
Panel b: Israel 1967 Borders (including East Jerusalem)								
All	139	51%	4824	632	4192	35	5	30
Civilians				612	4139			
% of all				97%	99%			
Suicide bomber								
All	69	67%	4048	495	3553	59	7	51
Bus	25	68%	1404	218	1186	56	9	47
Café, Mall (etc.)	19	84%	1533	174	1359	81	9	72
Other	25	52%	1111	103	1008	44	4	40
Booby trap	3	33%	138	18	120	46	6	40
Shooting / snipers	34	41%	431	57	374	13	2	11
Demolition Charge	1	100%	94	9	85	94	9	85
Stabbing	12	50%	14	14	0	1	1	0
Kassam rockets	4	0%	26	6	20	7	2	5
Ambush / kidnapping	5	20%	11	10	1	2	2	0
Infiltrated	3	0%	12	7	5	4	2	2
Military battle	1	0%	11	2	9	11	2	9
Other	7	29%	39	14	25	6	2	4

Notes.

Data on terror attacks against Israeli targets is taken from the Israeli Ministry of Foreign Affairs

http://www.mfa.gov.il/MFA/Terrorism-%20Obstacle%20to%20Peace/Palestinian%20terror%20since%202000/Victims

Data Appendix Table 3.

Terror Incidents and Casualties by Type of Attack, Location, and Day during the Week

Day of the Week	Incidents		Fatal Casualties			Wounded			Suicide Bomber			
				Civilians			Civilians				bus related	
	All	**ISR 67**	**All**	**All**	**ISR 67**	**All**	**All**	**ISR 67**	**All**	**ISR67**	**All**	**ISR67**
Total	403	139	1125	877	607	4836	4587	4139	80	69	26	25
% of all		**34%**		**78%**	**54%**		**95%**	**86%**		**86%**	**33%**	**31%**
% within category					**69%**			**90%**				**96%**
Sunday	62	29	185	148	119	995	964	920	16	15	7	7
Monday	56	15	89	66	35	355	337	318	8	8	0	0
Tuesday	65	22	204	165	117	784	740	678	12	10	6	5
Wedensday	58	25	212	172	141	903	852	821	16	14	6	6
Thursday	74	25	210	162	84	872	826	599	15	13	6	6
Friday	54	10	119	78	45	461	421	402	6	5	1	1
Saturday	34	13	106	86	66	466	447	401	7	4	0	0
Average	58	20	161	125	87	691	655	591	11	10	4	4

Notes.

Data on terror attacks against Israeli targets is taken from the Israeli Ministry of Foreign Affairs http://www.mfa.gov.il/MFA/Terrorism-%20Obstacle%20to%20Peace/Palestinian%20terror%20since%202000/Victims

Data Appendix Table 4.
CBS Expenditure Surveys For the Years 1995 to 2004

Exclusion cretiria	Households		
	Number	**% of previous step**	**% of initial**
All	36099	1	--
Excluding:			
Households for which family file is missing	34044	94%	6%
Households where head is younger than 22 or older than 79	32559	90%	4%
Head does not report schooling	31496	87%	3%
Head does not report marital status	31495	87%	0%
Head does not report immigration status	31301	87%	1%
Head missing religion or inconsistent	31301	87%	0%
Head does not report country of birth	31301	87%	0%
Household does not report city / location of residency	31301	87%	0%
Household reports total incomes <=0	31261	87%	0%
Base file:	**31261**	87%	0%
Among them			
with bi-weakly diaries observed for 2-weeks	27439		12%

11 Appendix B

Proposition 1 *An increase in the taste for x through an increase in a induces an increase in the consumption of x when expenditures on reducing fear, E are exogenously given*

Proof. FOC for $E = 0$ and for $E = 1$ are

$$
\begin{aligned}
W_x^0\left(x^{0*}\right) &= a\left(p_x^0 au(x^{0*}) - p^0 u_x\left(x^{0*}\right)\right) + p_x^0\left(I - \pi_x x^{0*}\right) - p^0 \pi_x &= 0, \\
W_x^1\left(x^{1*}\right) &= a\left(p_x^1 au(x^{1*}) - p^1 u_x\left(x^{1*}\right)\right) + p_x^1\left(I - \pi_x x^{1*} - \pi_E\right) - p^1 \pi_x &= 0,
\end{aligned}
$$

where $p^0 = p\left(x, \tau, f\left(\tau, m\right)\right)$ and $p^1 = p\left(x, \tau, 0\right)$. x^{0*} and x^{1*} represent the optimal consumption of x for $E = 0$ and $E = 1$ respectively.

Note that both $a\left(p_x^0 au(x) - p^0 u_x\right)$ and $a\left(p_x^1 au(x) - p^1 u_x\right)$ are positive which means that

$$
W_{xa}^0 > 0; \quad W_{xa}^1 > 0.
$$

Since $W_{xx}^0 < 0$ and $W_{xx}^1 < 0$ then

$$
\frac{dx^{0*}}{da} > 0; \quad \frac{dx^{1*}}{da} > 0.
$$

∎

Proposition 2 *An increase in the degree of terrorism τ reduces consumption of x when expenditures on reducing fear, E are exogenously given.*

Proof. According to FOC $\left(au_x - \pi_x\right) > 0$ for $E = 0$ and for $E = 1$. According to FOC $\left(au_x'\left(x^{0*}\right) - \pi_x\right) > 0$ and $\left(au_x'\left(x^{1*}\right) - \pi_x\right) > 0$. Given our assumption that $p_\tau' \leq 0$ and that $p_{\tau x}' \leq 0$ then

$$
\begin{aligned}
W_{x\tau}^0\left(x^{0*}\right) &= p_{x\tau}^0\left(au(x^{0*}) + I - \pi_x x^{0*}\right) + p_\tau^0\left(au_x\left(x^{0*}\right) - \pi_x\right) &< 0, \\
W_{x\tau}^1\left(x^{1*}\right) &= p_{x\tau}^1\left(au(x^{1*}) + I - \pi_x x^{1*} - \pi_E\right) + p_\tau^1\left(au_x\left(x^{1*}\right) - \pi_x\right) &< 0.
\end{aligned}
$$

Since $W_{xx}^0 < 0$ and $W_{xx}^1 < 0$ then

$$
\frac{dx^{0*}}{d\tau} < 0; \quad \frac{dx^{1*}}{d\tau} < 0.
$$

∎

Proposition 3 *Consumers with a greater taste for x are more likely to spend π_E and overcome fear, given the degree of terrorism.*

    Proof. By the envelope theorem the effect of an incremental increase in a on $(W^1(x^{1*}) - W^0(x^{0*}))$ is

$$\frac{d\left(W^1(x^{1*}) - W^0(x^{0*})\right)}{da} = p\left(\tau, x^{1*}\right)u(x^{1*}) - p\left(\tau, x^{0*}, F\left(x^{0*}\right)\right)u(x^{0*}). \qquad (21)$$

We have shown that $x^{1*} > x^{0*}$. Therefore, by revealed preferences

$$W^1\left(x^{1*}\right) = p\left(\tau, x^{1*}\right)\left(au(x^{1*}) + I - \pi_x x^{1*} - \pi_E\right) > p\left(\tau, x^{0*}\right)\left(au(x^{0*}) + I - \pi_x x^{0*} - \pi_E\right) = W^1\left(x^{0*}\right).$$

Note that

$$p\left(\tau, x^{1*}\right) < p\left(\tau, x^{0*}\right), \qquad (22)$$

and

$$\left(I - \pi_x x^{1*} - \pi_E\right) < \left(I - \pi_x x^{0*} - \pi_E\right). \qquad (23)$$

Therefore

$$p\left(\tau, x^{1*}\right)au(x^{1*}) > p\left(\tau, x^{0*}\right)au(x^{0*}). \qquad (24)$$

Note that

$$p\left(\tau, x^{0*}\right) > p\left(\tau, x^{0*}, F\left(x^{0*}\right)\right),$$

and therefore

$$p\left(\tau, x^{1*}\right)au(x^{1*}) > p\left(\tau, x^{0*}, F\left(x^{0*}\right)\right)au(x^{0*}). \qquad (25)$$

∎

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