

College Student Suicide: Putting the Pieces Together

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Outline and summary:

Items in parentheses are the numbers identifying the slides in the PowerPoint display associated with this presentation

- 1) **The bases for concern about student suicide.**
 - 1.1 Death among college age persons is rare, ~ 1 per 7,000 per year.
 - 1.2 Suicide, however, is the 2nd leading cause of student death [2,3]
 - 1.3 Any student death can be traumatic for the campus
 - 1.4 A student suicide often touches other students and student affairs personnel in powerful ways [4,5]
 - 1.5 A student suicide can haunt the campus for years, becoming a profound public relations challenge [4-9]

- 2) **Historical Overview of suicide among college age persons in the US [10-13]**
 - 2.1 Reports of suicide rates among college age persons are accurate in the narrow sense, yet what they convey is “untrue”.
 - 2.2 Thus, suicide rates have tripled since the 1950’s, as is often reported. But all of this dramatic increase took place between 1955 and 1976. These same, once sky-rocketing, suicide rates have been either stable for the past 25 years or more recently declining! [6,8]
 - 2.3 Suicide rates for males have declined 20% in the past 5-7 years [7]
 - 2.4 Suicide rates for females have declined steadily for the past 20 years and are now half of their peak of 30 years ago and close to their historically lowest level [12,13]
 - 2.5 In the 20-24 year age group, the suicide rates for males has been 4 to 5 times that of females. That ratio is now 6 to 7 times as great. [10]
 - 2.6 All studies of student suicide have found the 20-24 age group to be most reflective of the student populations studied.
 - 2.7 The earliest studies of suicide among students, covering 1920 through 1960, described student populations that were disproportionately White [90+%] and male, making data for 20-24 year White populations in the US the most appropriate comparison group for student suicide.
 - 2.8 For males, suicide rates are presently constant from age 20-24 through 65-70, and the difference in rates for Whites versus others is minor [5%]. [14]
 - 2.9 For females, suicide rates increase substantially with age until the mid-50’s and then decline. At present, race becomes a more significant feature with age, but is minor [5%] for college age females. [15]
 - 2.10 Apart from a small number of reports, each based on a single, atypical campus [Berkeley, Cornell, Harvard, U. Michigan, Vassar, Yale] and on 35 or fewer suicides, research on student suicides committed through the

1980's had convincingly shown that students suicide at one half the rate of persons of the same age and sex in the general US population. [16]

3. Contemporary student populations [17]

- 3.1 One of the important changes in student populations in the past 60 years is that more than half of students [55%] at both the undergraduate and graduate levels are now women. [17]
- 3.2 A substantial portion [39%] of students in higher education are in 2-year institutions. [17]
- 3.3 By age, place of residence, and other life circumstances, these students are NOT comparable to those used in studies of student suicide. [One might expect the suicide experience of these students to be more like that of the general population.]
- 3.3 The racial profile of contemporary students is similar to the general US population.

4. Student suicide 1990-2003 [18-24]

- 4.1 There have been no focused, multi-site studies of student suicides covering the 1990's or later.
- 4.2 Two annual surveys, however, do provide data on student suicides during this period:
 - a) The Counseling Center Data Bank [Data Bank] conducted by Thomas Magoon, PhD at the U. of Maryland under the auspices of the Asso for Univ and College Couns Center Directors [AUCCCD].
 - b) The National Survey of Counseling Center Directors [Nat Svy] conducted by Robert Gallagher, PhD at the Univ of Pittsburgh under the auspices of the International Association of Counseling Services [IACS]
- 4.3 Reporting practices make the Nat Svy the only relevant source for student suicide during the 1990's to the present.
- 4.4 Annually -- during the 13 year period 1991-2003 -- 300 4-year colleges and universities [+/- 50] reported 130 [+/-] student suicides of which 30 [+/-] were by clients or former clients of the institution's counseling center. [19]
- 4.5 The infrequency of suicide makes estimates of the true suicide rates based on these annual numbers rather unstable, particularly where suicide by clients is concerned. For 130 student suicides that yield an observed rate of 10.0, the true rate could be as low as 8.3 or as high as 12.0 [-/+ 17%-20%]. For 30 client suicides that yield an observed rate of 10, the true clients suicide rate could be as low as 6.8 or as high as 14.3 [-/+ 32%-43%]. [18]
- 4.6 The Nat Svy data indicate that the rate of student suicide has not changed over time, assertions in the popular press notwithstanding. [20, 22, 7]
- 4.7 The crude rate indicated by the Nat Svy data [4.2 per 100,000] appears too low when compared to rates found in studies spanning the 1970's and the 1980's. [20, 22]
- 4.8 An adjustment of the rate found for the Nat Svy data [4.2], one that takes into account the source of that data, yields a rate [6.3] that is consistent with the changes in suicide rates for the general US population, with

changes in the demography of the source institutions and with earlier findings. [22]

- 4.9 Nat Svy data indicate that 24% of student suicides occur among the 10% of students who – at some time – are clients at the institution’s counseling center. The remaining 76% of suicides occur among the 90% of students who are never clients. [21].
 - 4.10 These findings yield a relative risk of suicide among clients that is 2.7 times that for students who are not clients. [22]
 - 4.11 Two features should be noted here. First, it is very likely that the **relative risk for suicide is greater among clients than among students more generally**. This is no different than the relative risk of death being higher among medical patients in a hospital than in the non-hospital population. In this sense, if counseling centers are functioning as they should be, the greater suicide rate for clients vs students is expectable. Second, the source of the Nat Svy suicide data, counseling center directors, makes it likely that a higher proportion of client suicides than of general student suicides are known to these sources. For this reason too, the client suicide rate would be expected to be comparatively higher. Taking this second feature into account, and melding it with the apparent under-reporting of student suicides generally, the comparative suicide rates for clients versus students can be regarded as between 1.6 and 2.7.
- 5. Updating and accounting for reduced student suicides. [23, 24, 26-29]**
- 5.1 The addition of Nat Svy data indicates that for the past 40 years, or perhaps even longer, students have committed suicide at half the rate of the general US population matched for age and sex. [22]
 - 5.2 One hypothesis to account for this is the greater availability to students of mental health services [Silverman et al, 1997]. This may play some role, but it cannot be a profound one.
 - 5.3 The density of mental health professionals varies with campus size. Nat Svy data indicate that the density is three times as great on the largest campuses [$> 15,000$] as on the smallest [$<2,500$]. [25]
 - 5.4 However, the suicide rate for campuses does NOT vary with size. If availability of mental health professionals were a significant element in reducing student suicide, this three-fold disparity ought to be apparent in the suicide rates of the largest versus the smallest campuses, but it is not.
 - 5.5 The experience in Great Britain many decades ago, when mercaptans were introduced into cooking gas, suggests that method of suicide could be relevant.
 - 5.6 For a century, firearms has been the leading method of suicide for males and has become overwhelmingly the most prominent method. [26]
 - 5.7 In 1990, **firearms accounted for twice as many male suicides as all other methods combined**. In 2000, firearms account for half-again as many male suicides as all other methods combined. [26]
 - 5.8 For females, firearms grew to be the leading method of suicide, supplanting poisons as the top ranking method in the 1970’s. [26]

- 5.9 At its peak in 1990, firearms accounted for half-again as many female suicides as all other methods combined and still remains very prominent. [26]
- 5.10 If method of suicide was **not** relevant to students having a 50% lower relative risk of suicide, then all methods of suicide would show a relative risk of about 0.5. Analyses of student suicides by method of suicide do not show that pattern. Rather, these data indicate that it is overwhelmingly the reduction of suicide by firearms [a factor of 5 !] that accounts for the dramatically lower rate of student suicide versus suicide in the general US population. [27, 28]
- 5.11 Keeping in mind that 80+% of all student suicides are males, it appears that the “protective benefit”, vis a vis firearms, of being a student accrues largely, and perhaps exclusively, to males. [26, 28]
- 5.12 These same analyses suggest that for males, jumping “substitutes” for firearms, though to a limited degree. [27]
- 5.13 More speculatively, females may be using poisons– the second ranking method for females -- in place of firearms, though again to a limited degree.
- 5.14 The absence of firearms from campuses is the basis for student suicides being half the rate of the age- and sex-matched general US population. Analyses of campus features that link students to the campuses – where there are no firearms – support this conclusion. [29]
- 5.15 Three features of campuses that are linked to access to firearms have been shown to be significantly related to reduced suicide rates:
- a) A higher proportion of students living in university owned or operated housing. [Campus regulations or state statutes typically ban firearms.]
 - b) A lower proportion of commuting students. When students live off campus [i.e. not in university owned or operated housing], but do not commute, they are less likely to have a firearm in their place of residence.
 - c) The proportion of students who remain on-campus on weekends. Staying where firearms are not available contributes to their being less available. [29]
- 5.16 Finally, national suicide rates vary by region. Data for the nine regions defined by the National Center for Health Statistics indicate that region with the lowest suicide rate [the middle Atlantic region] has half the suicide rate of the region with the highest rate [mountain states]. Suicide rates for campuses follow the same pattern as found for the region in which they are located. This most likely reflects the regional availability of firearms, but the regional culture and attitude towards firearms may also play a role.
- 6. The question of increasing pathology among students.**
- 6.1 Whether students generally, and student clients in particular have become more severely distressed over the past 15 to 20 years is relevant to assessing the efficacy of suicide prevention programs. [31, 35]

- 6.2 The limited number of single-campus studies that have been published, are consistent in reporting that quantitatively and qualitatively **client-derived [self-reported] actuarial measures of pathology, severity or acuity have not changed.** [Pledge, DS et al (1998); Cornish, JAE et al, (2000)]
- 6.3 The belief that the number of student clients with severe psychological problems has been increasing had been based largely – perhaps exclusively -- on staff judgments and perceptions as reported in the Nat Svy. [30]
- 6.4 These annual Nat Svy reports have consistently shown that a typically overwhelming proportion [75+%] of the counseling center directors have reported this increase. [30]
- 6.5 This now putative increase has been characteristic for almost 20 years and has occurred in the context of both stable enrollment [mean EFT enrollment ~10,000 for Nat Svy respondents] and stable utilization rates [~10%]. [30, 34]
- 6.6 The “impossibility” of this unrelenting, 20-year increase in acuity is illustrated by reference to the Global Assessment of Functioning scale [GAF], also known as Axis-V of the DSM multi-axial assessment schema. [32]
- 6.7 Analysis of over 4,100 therapist-assigned GAF scores shows that therapists’ ratings [mean=65.81; SD 10.04] fall on the GAF values ending in zero and five; viz. 50, 55, 60, 65, etc. [33]
- 6.8 This implies that therapists will far more often designate a client as a 60 or a 65, than as a 62 or 63. Thus therapists routinely discriminate about 2.5 GAF units.
- 6.9 In the context of stable enrollment and utilization, any change in either the mean acuity of student clients, or in the proportion of clients warranting lower GAF scores, if applied every year for 15 or 20 years, would dramatically alter both the mean GAF of the client sample and the shape of its distribution. However, there is no empirical support for such a change based on any actuarial measure that, like the Global Severity Index [GSI] of the SCL-90 or the Brief Symptom Inventory [BSI], could be viewed as approximating the GAF.
- 6.10 Despite being based exclusively on staff judgements and not supported by actuarial measures, the more newsworthy assertion that student clients are presenting with more severe problems has come to be accepted as a fact. [34]
- 6.11 We can expect that nascent suicide prevention programs that show rates that are merely comparable to those of the past 20 years will claim to be effective on the grounds that keeping suicide at historical levels is itself a significant achievement in the face of increased student pathology. [35]
- 6:12 The problem is one of perception, though “cognition” may better capture the active and constructive character of the process.

The data on which staff base their judgments necessarily comes from the client. Sometimes this information arrives in the form of

responses to questionnaires [BSI, CASPER]. At other times, it arrives – instead or in addition – as the verbal and non-verbal data provided by clinical interviews. The crucial issue is how staff organize these data. The identical information [e.g. the lines and other elements of the visual gestalt] can be organized to yield a beautiful young woman or an aged older one. This is not simply a question of figure-ground reversal, but of what meaning the viewer assigns to the elements of the figure. Is *that* element the lower edge of left jaw, viewed from somewhat behind the subject? Or is that same element the base of a nose seen largely in profile? In one interpretation the picture is that of a stylishly dressed, beautiful young woman – i.e. staff perceive a minimally distressed student client. In the second interpretation, it is a sketch of an older woman, with strong features, wearing a kerchief over her hair – i.e. staff perceive a more severely troubled student client. [36]

7. Unpublished data from another single-campus study [N~3,000]

- 7.1 The Personality Assessment Inventory [PAI; Morey, L (1991)] yields findings that are consistent with previous actuarial findings, and extends them. [37-46]
- 7.2 There is no consistent pattern of increase in the actuarially-derived mean acuity for student clients over the decade spanned by these data. [37].
- 7.3 Although a quantitative, actuarial assessment of client acuity [PAI] was available to therapists for 60% of the clients they saw, nonetheless they tended to assign increasingly severe GAF scores to their clients. Without the [sometimes available] anchor of the PAI, it is likely that this change would have been even greater. [38]
- 7.4 The pattern for actuarially-derived DSM nosologic entities is also consistent across time.
 - a) 25%-30% of student clients do not qualify for any definitive [vs rule-out or tentative] DSM Axis-I diagnosis.
 - b) The three most common diagnoses – Major Depressive Episode and Bipolar-I; Adjustment Disorders [largely mood related] and Dysthymic Disorder -- remain the most prominent diagnoses at about 15% each. Cumulatively these three diagnoses account for 45% of all definitive, actuarially-assigned, positive Axis-I diagnoses. When added to the 25%-30% without a definitive Axis-I diagnosis, 75% of all clients are now accounted for. [39, 40]
- 7.5 The four second-tier diagnoses, cumulatively 15% of all positive Axis-I diagnoses, by virtue of being less frequent are also less stable in annual proportion. But given that fact, they show no systematic change with the possible exception of Schizophrenia which appears to have *declined* from 3%-5% in the early 1990's to 1%-2% in the early 2000's. V-codes, on the other hand, may have increased in proportion. [41]
- 7.6 A consistent 3% of student clients receive a definitive assignment of no Axis-I disorder [DSM-IV= V71.09]. [42]

- 7.7 There has been no significant change in the extent to which student clients warrant a definitive Axis-II diagnosis. This proportion may have *declined* slightly [$p < .15$] from 20% to 16%. [43]
- 7.8 In respect to **suicidality** specifically, the PAI has a 12-item suicide scale. Annual means show a non-significant [$p < .30$] *decline* [$r = -.46$] for the decade spanned by the data. [45, 46]
- 7.9 While there has been no increase in the suicidality of student clients, **their mean suicide T-Score [Mn= 58.3] places the average client at the 80th percentile of the general student population.** [46]
- 7.10 In the normative student population, 42% of students do not endorse any of the 12 PAI suicide scale items at any level [raw score=0]. Among student clients, only 16% have a raw score of zero.
8. **Rates and Raters: Student Clients and Counseling Center Staff**
[30-50]
- 8.1 When assessed actuarially, student clients have apparently not changed over the past 15 to 20 years. What students report today is what they reported a decade or more ago. However, staff assessments and diagnostic assignments have changed, with some reports asserting that rates of depression have increased from 20% to 40% among clients. In fact, what appears to have occurred is that staff judgements and assignments have become more congruent with what has been a stable actuarial determination of client pathology. [30, 47-49]
- 8.2 Staff treatment initiatives have also changed. This is evident in the unpublished data introduced in the preceding section. While the PAI indicated a high degree of quantitative and qualitative sameness for student clients over the past decade, there had concurrently been a consistent and then, more recently, a dramatically sharp increase in the proportion of student clients initiated on medication [overwhelmingly antidepressants]. [48-49]
- 8.3 This proportion increased by a factor of 2.7 over an earlier 16-year period, from 3% in the mid-1980's to 8% in the later 1990's [$r = .92$, $p < .0001$]. During this period, the number of clients increased from 400 to 750 clients per year and then subsided to 600 per year. These changes reflect campus administrative restructuring in 1991 and then a planned reduction in the population at risk in the mid-1990's. [48]
- 8.4 In the past five years, 1998-2003, with the number of clients increasing from 600 to 750 [25%] but reflecting only a 15% increase in utilization rate, this proportion has risen by a factor of 4, from 7% to 28%. Again, there was no increase in the proportions of clients whose diagnoses would indicate that medication would be an appropriate aspect of any treatment plan. Thus, **increased utilization would suggest a 15% increase in medication usage, but the increase is 300%, 20 times as great!** [49]
9. **Clinical and Epidemiologic Perspectives: Relative Risk [RR] and Population Attributable Risk Percent [PAR%].** [50-60]

9.1 The number and variety of events, situations and conditions that have been empirically identified as risk factors for suicide is extensive. In this sense, living is a risk factor; and in consequence, such lists are of very limited value clinically or epidemiologically. Because they often covary, it is difficult to apportion risk among factors. The total risk associated with a collection of factors often exceeds 1.00, or 100% of the total risk. [12: c, d]

9.2 In developing suicide prevention initiatives, clinical and epidemiologic approaches complement each other. Clinical approaches target individuals identified as being at increased risk for suicide. Clinically oriented efforts to prevent suicide usually involve focusing treatment resources on the individual. Epidemiologic approaches are generally less concerned with who is presently at increased risk for suicide or with treatment. Epidemiologic approaches seek to reduce suicide by addressing the environmental conditions that dispose to suicide or that enable it. [52]

9.3 In respect to the student population, it suffices to consider four factors that have been linked to risk of suicide: Prior Attempts, Psychiatric Illness, Gender, and Access to a Firearm. [52]

9.4 In the clinical perspective we speak of the Relative Risk [RR] of suicide for contrasting groups [e.g. Gender -- males vs females: RR = 6.5:1], where one of the levels of the factor [here, females] is the reference level [risk=1]. The Epidemiologic equivalent of Relative Risk is the Population Attributable Risk Percent [PAR%]:

$$PAR\% = \{[RR - 1] / RR\} * P * 100$$

Risk Perspective Factor	Clinical Perspective [Relative Risk=RR]	Epidemiologic [Population Attributable Risk Percent=PAR%]
Prior Attempt [Reference = none]	Rank=1, the largest Males RR~40:1 Females RR~60:1 Proportion with factor ~.02 [5%]	4 th ranking, least of the 4 Males in Population: ~45% PAR% = 2%
Psychiatric Illness [Reference = none]	2 nd largest Males RR~20:1 Females RR~15:1 Proportion with factor ~.05 [5%]	3 rd ranking of the 4 Males in Population: ~45% PAR% = 5%
Gender [Reference = female]	3 rd largest Male RR~6.5:1 Proportion	2 nd ranking of the 4 Males in Population: ~45% PAR% = 38%

	with factor	~.45 [45%]	
Access to Firearm	4 th , least		1 st , largest of the 4
[Reference = no]	Yes	RR~2.5:1	PAR% = 60%
	Proportion		
	with factor	1.00 [100%]	

Note that for these two contrasting, yet complementary, perspectives, the rank orders of these four risk factors are perfectly negatively correlated, $r = -1.0$.

10. Prevention [26-29, 61-68]

- 10.1 To date, and serendipitously, the banning of firearms from campuses has been the most, and perhaps the only, meaningful suicide prevention initiative. In this respect, the epidemiologic perspective has been the more useful one in understanding what accounts for student suicide rates being half that of the general population matched for age and sex. [26-29]
- 10.2 Two comparatively recent programs hold some promise for pointing useful initiatives that could further reduce student suicide rates. [61-65]
- 10.3 In 1995 the United States Air Force [USAF] launched a trial suicide prevention program and then implemented a prevention strategy on a system-wide basis in 1996-97. In the context of a stable level of personnel, the suicide rate for USAF active duty personnel declined from a mean rate of 13.2 [1990-94; N=445] to a mean rate of 7.9 [1997-99; N=164], a statistically significant reduction [$p < .05$], though barely so. Of equal importance, however, is that the suicide rates for three other branches of the armed services [Army, Navy and Marines] showed no change in mean suicide rates during this same 3-year period.
- 10.4 The USAF program included the introduction of a limited psychotherapist-patient privilege. This allowed USAF personnel to talk to professionals without the professionals having to report misconduct or other stressors to superiors. The program also trained "gatekeepers" [chaplains, squad leaders, medical providers, etc] to recognize emotional health impairments and to refer to appropriate resources.
- 10.5 Several features make the USAF initiative of questionable relevance to the student population. No comparably comprehensive, hierarchically organized, and disciplined network of gatekeepers and leaders exists. USAF personnel have been screened to exclude substance users and abusers, and substance use is a known risk factor for suicide. Considerably broader therapist-patient privilege already obtains at colleges and universities.
- 10.6 A second source for potential suicide prevention initiatives is the University of Illinois Program. Students who, by virtue of having engaged in or threatened deliberate self-harm -- and have come to the attention of

campus student affairs personnel, residence hall staff, faculty, or others -- are **required** to participate in a four-session series of meetings with specially trained campus mental health professionals or leave the campus. Initiated in 1984, Paul Joffe, PhD, the architect and main implementer of the program, has reported reductions in the suicide rate for the U. Illinois campus. However, only one of several different group and sub-group comparisons demonstrated statistically significant reductions in student suicide rates, and this comparison, which was limited to undergraduates [both sexes combined], was based on just 16 pre-intervention and 8 post-intervention suicides. [6614: c]

- 10.7 The U. Illinois study may have promise, but convincing evidence of its efficacy, even on the U. Illinois campus, is still lacking. There are other difficulties that warrant mention. There is as yet no evidence that the program, even if it proves to be effective at the U. Illinois, can be successfully exported to other campuses. At the U. Illinois, the issue of “mandated treatment” was finessed by designating the four required meetings as an “assessment”, allowing the campus counseling center to maintain its stance of doing mandated assessment but not mandated treatment. Whether other campuses would be willing to embrace this structure is a question. Additionally, while it is likely that other professionals can master the interviewing approach that Joffe has developed, that has yet to be demonstrated.
- 10.8 The USAF and the U. Illinois program both approach suicide prevention in a fashion that is exclusively or predominantly “clinical” rather than epidemiologic. They emphasize identifying who is at risk and focusing suicide prevention – typically in the form of treatment – on those individuals.
- 10.9 This clinically oriented approach to suicide prevention has historically dominated suicide prevention initiatives. It continues to do so as indicated by the compendium of initiatives published in 2002, as “Safeguarding Your Students Against Suicide,” under the auspices of the National Mental Health Association and the Jed Foundation.
[67]
- 10.10 Suicidologists have developed a two dimensional taxonomy of suicide prevention initiatives that does include approaches with an epidemiologic orientation. The two dimensions are “Level” or “Scope”, and “Stage”. [68]
- 10.11 The U. Illinois program is oriented toward the most advanced, the *tertiary* stage of the process that leads to suicide. For this reason, this program deals with a comparatively small subset of the total population, those for whom the program is *indicated*. The USAF program also focuses on the *secondary* and *tertiary* stages, emphasizing the identification and provision of services to those who are already exhibiting emotional distress, the *selected* and the *indicated*. Initiatives with a *primary* stage focus are not limited to subsets of the population. That is, they also tend to be *universal* in their scope. Banning firearms from campuses limits access to them for all students, though perhaps in varying degrees, less

so for commuters, most for those residing in university operated residence halls. This initiative also affects the entire population, not just those who are presently suicidal, or those with other risk factors such as a history of prior suicide attempts or of psychiatric illness.

- 10.12 Epidemiologic approaches to suicide prevention may be coming into focus. A recent article in the Chronicle of Higher Education identified initiatives that could limit access to poisons and make jumping a less easily implemented mode of suicide. This orientation may well prove the more effective one to employ if the goal is to further reduce student suicide rates.

11. Addendum: Counseling centers and suicide prevention

- 11.1 The level of suicidality among student clients is higher than among students in general, as shown in items 7.9 and 7.10 above.
- 11.2 We can compare the Population Attributable Risk for clients relative to students generally just as we did for students versus non-students. The relative risk of suicide among clients, with students in general as the reference level, can be determined from the four risk factors identified in items 9.3 through 9.5 above.
- 11.3 Since the relative risk associated with three of these risk factors is linked to gender [viz. Prior Attempt, Psychiatric Illness and Gender itself], the proportion of males and females among clients and students is relevant. For students, males comprise 45% of the population. Since males use counseling centers at about half the rate of females, they comprise 29% of clients.
- 11.4 The second consideration is the relative proportions in the student and client populations with the risk factor. These two considerations, and the relative risk they imply, are summarized below for each of the four risk factors.

Contributions to Risk of Suicide:

[Reference Level: Persons without the Risk Factor, Risk=1;
 Risk = [Male * [RR_{male} - 1] * P_f] + [P_{female} * [RR_{female} - 1] * P_f]

	Students [Males=45%]	Clients [Males=29%]	Risk	Relative
Prior Attempt				
Proportion with factor: [P _f]	0.02 [2%]	.12 [12%; Client resp: Have you ever...?]		
Males: RR: 40	[.45 * 39 * .02] +	[.29 * 39 * .12] +		
Females: RR: 60	[.55 * 59 * .02] =	[.71 * 59 * .12] =		
	1.0	8.4		8.4:1

Interpretation: Based on the proportions of males and females, and the comparative presence of this one risk factor in the two groups, clients have more than eight times the risk of suicide as do students generally.

Psychiatric Illness

Proportion with factor:	0.05 [5%]	.20 [20%; Maj Dep; Bipol-I, II; Schizo; Oth Psychosis]		
Males: RR: 20	[.45 * 19 * .05] +	[.29 * 19 * .20] +		
Females: RR: 15	[.55 * 14 * .05] =	[.71 * 14 * .20] =		

0.43

3.1

7.2:1

Interpretation: Based on the proportions of males and females, and the comparative presence of this one risk factor in the two groups, clients have more than seven times the risk of suicide as do students generally.

Gender

Proportion with factor: .45 [45%] .29 [29%]

RR: 6.5

[.45 * 5.5] = 5.5

[.71 * 5.5] = 3.9

.71:1

Interpretation: Based on the proportions of males and females, and hence the comparative presence of this one risk factor in the two groups, clients have only 70% the risk of suicide as do students who are not clients.

Access to Firearm

Not different for clients and students generally.

1:1

Summary: This analysis leads to a conclusion that contrasts sharply with one that was articulated previously [items 5.2-5.4].

If one considers these four risk factors as wholly independent of each other [certainly false, but not egregiously and a useful fiction], then -- as a group -- student clients would be 40 times more likely to suicide than are students generally. One might say that increasing a student's or a groups standing on the PAI suicide scale by 0.8 standard deviations [item 7.9 above] represents a 40-fold increase in the likelihood of suicide.

If counseling center services and treatments were utterly ineffective in reducing suicide, the suicide rate among clients would be 40 times the rate among non-clients. In fact, while the rate among clients is greater than the rate among non-clients, it is only about twice the rate [per item 4.11, a factor of 1.6 to 2.6]. It would appear that **counseling center services and treatments reduce the likelihood of suicide among this client population by a factor of 20.** Allowing for the co-linearity of the risk factors considered here, and a variety of other considerations, this might substantially overstate the efficacy of counseling center services and treatments. But the likelihood that they are simply ineffective is virtually dismissable.

The earlier analysis [items 5.2-5.4] indicated that enhanced staffing of counseling centers would not meaningfully reduce student suicide rates. The immediately preceding analysis suggests that if programs that enhance the utilization of these services can be developed, and if the present level of service provided by these agencies can be sustained in the context of such increased utilization, then student suicide could be prevented and student suicide rates further reduced. How can these apparently contradictory findings be resolved?

Perhaps the most obvious possibility is that, independent of the relative availability of professional mental health resources, counseling centers are seeing those students for whom their services can be effective in preventing student suicide. This argument receives some support from the relationship between the availability of

professional resources and utilization rates for counseling centers. Data from the Nat Svy indicate that utilization rates decline monotonically with campus enrollment, with utilization rates at the smallest campuses [$<2,500 = 14.3$] approaching twice the rates at the largest campuses [$>15,000 = 7.8$]. In this regard, utilization rates and the availability of mental health professionals parallel each other in that both decline in a curvilinear fashion with increasing campus enrollment.

The possibility that, independent of the availability of counseling center staff, counseling centers are already treating those most at risk for suicide – and doing about as much as can presently be effectively done at the “advanced” stages of suicidality at which they encounter them -- is not likely to be the whole story in resolving the contradictory findings noted above, but it may prove a useful starting point for resolving them.