REVIEW AND CRITIQUE OF THE DISABILITY RIGHTS CALIFORNIA'S REPORT

SUICIDES AT SAN DIEGO COUNTY JAIL: A SYSTEM FAILING PEOPLE WITH MENTAL ILLNESS

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Suicides at San Diego County Jail: A Crisis by Any Measure?

Disability Rights California (DRC) report "Suicides at San Diego County Jail: A System Failing People with Mental Illness" [1] uses a statistical analysis to support the premise that the San Diego County jail system has "a crisis by any measure." The analysis, however, uses comparisons that appear to be specifically chosen to support the desired conclusion. Furthermore, the method used to calculate the suicide rate does not yield a meaningful measure and is not appropriate for comparisons across diverse counties. Using a more appropriate method to calculate suicide rates and more complete data yields a completely different conclusion. We conducted a rigorous statistical analysis of the suicide data from the ten largest California County jail systems using a suicide rate calculation that yields "more appropriate comparison[s]" (BJS Special Report [2]) and find that San Diego jail system is, in fact, similar to other California counties and that its suicide rate is not the highest rate (see Figure 1). Thus, one cannot conclude that San Diego jail system has "a crisis by any measure".

INMATES AT RISK SUICIDE RATES
Standardized to the average racial distribution, 2010-2017
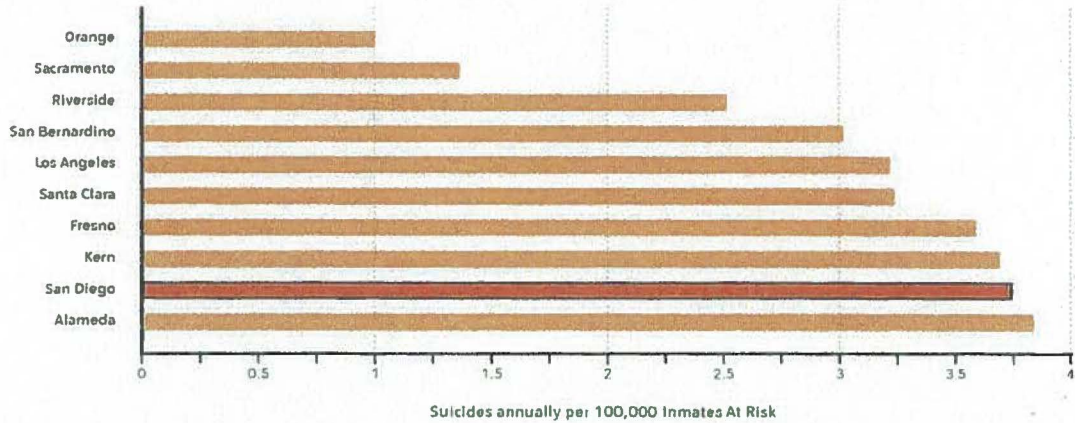

Suicides annually per 100,000 Inmates At Risk

Figure 1: A comparison of the suicide rates (standardized inmates at risk calculation) of the ten largest California counties for 2010-2017.

What Measure is Appropriate to Compare Suicide Rates?

The DRC report states [1 p. 3] "San Diego County Jail has the highest reported incidence of suicides in the California Jail System over several years – more than 30 suicide deaths since 2010". Actually, Los Angeles County had the highest reported number of suicides in this period (34), according to data obtained in a California Public Records Act Request for Records. More importantly, comparing the number of suicides across jail systems is not appropriate because the jail systems are of different sizes, with different numbers of inmates. The largest jail systems will generally have the largest numbers of suicides. Calculating a suicide rate (the number of suicides divided by the number of inmates in the jail system) is a more fair method to compare the jail systems. Suicide rates are generally calculated as the average number of suicides per year per 100,000 inmates at

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risk. In fact, this is the definition of the incidence of suicide: the average number of suicides per year divided by the number of inmates at risk (the "at-risk rate").

The DRC report also compares the suicide rate of San Diego to other California jail systems, but they use the average daily population (ADP) of the jail system as the denominator (the ADP suicide rate) rather than the number of inmates at risk. Unfortunately, the ADP suicide rate has several flaws that make it inappropriate for comparing diverse jail systems. The *Bureau of Justice Statistics Special Report on Suicide and Homicide in State Prisons and Local Jails* [2] mention that the ADP suicide rate methodology is less desirable than the at-risk rate (p.11), but concede that the ADP rate has been used historically when data to calculate the at-risk rate was unavailable. Other researchers [3, 4, 5 (p.28), 6 (p. 187), 7, 8 (p. 418)] have also pointed out the methodological flaws with the ADP calculation of the suicide rate.

Why is an ADP Suicide Risk an Inappropriate Comparison?

The ADP suicide rate yields a statistic that is not easily interpretable. The interpretation of the at-risk suicide of San Diego in the period 2010-2017 of 3.7 suicides per 100,000 inmates is: on average 3.7 out of 100,000 inmates committed suicide per year. Since San Diego had an average of 92,000 inmates per year during this period (close to the 100,000 inmates in the statistic), the suicide rate is only slightly lower than the average number of suicides per year (3.9 suicides per year).

The ADP suicide rates quoted in the DRC report (106, 120 and 94 suicides per 100,000 inmate-years for 2014, 2015 and 2016, respectively), however, yield suicide numbers that are approximately 20 times larger than the actual numbers of suicides in these years (6, 6, and 5, respectively), and are more than 3 times larger than the number of suicides in the entire period 2010-2017 even though there were more than 700,000 inmates in the system during this period. We note that the DRC consistently reports ADP rates per 100,000; the units of the statistic are not given, but they should be inmate-years.

How can the ADP suicide rate yield numbers that are so high as to be incongruous with the data? The ADP suicide rate is calculated using a denominator of an inmate-year. An inmate-year consists of one inmate in the jail system for an entire year. Most inmates stay in the San Diego jail system much less than an entire year; in fact, the average length of stay for 2011-2017 is just 22 days [9]. So how do you get an inmate-year? Inmates with shorter lengths of stay are effectively strung together to make an inmate-year. Twelve inmates serving 30 days each would constitute one inmate-year. With an average length of stay of just 22 days, San Diego would require on average 365/22 = 16.6 inmates strung together to make up each inmate-year in the denominator of the ADP suicide rate. This methodology leads to the absurd conclusion that there can be multiple suicides within each inmate-year; the conclusion is particularly absurd when the unit is expressed as just an inmate, as it is done in the DRC report. This is also why the ADP suicide rates are approximately 17 times the at-risk suicide rates.

The ADP suicide rate is especially flawed when used to make comparisons across jail systems with different length of stay distributions. Comparing San Diego, with an average length of stay of 22 days, to Los Angeles, with an average length of stay of 56 days [9], is problematic. San Diego requires approximately 17 inmates strung together to make up each inmate-year; whereas Los Angeles requires only an average of 6.5 inmates to make up each inmate-year. This attribute of the ADP suicide rate inflates the San Diego rate two and one-half times as much as it inflates the Los Angeles rate. It is for these reasons that Crighton and Towl [6] (p.188) conclude "It is essential that

such comparisons not be made in unreflective and mechanistic ways such as using ADP rates comparing two samples with very different characteristics."

To estimate one inmate-year with a number of inmates with short lengths of stay requires the assumption that the risk of suicide in days 300-330 for an inmate serving a full year is the same as the risk of suicide in days 1-30 for an inmate with a short length of stay. Since most suicides occur within the first 30 days of incarceration [2], this assumption is clearly untenable.

Are San Diego jail inmates 5 times more likely to die as an inmate in the California's State prison system and 8 times more likely to die by suicide than the average San Diego County resident?

These DRC statements [1 p.4] come from a comparison of the ADP suicide rates in the three-year period (2014-2016) in which San Diego jail system had an unusually high number of suicides. Further, the ADP suicide rate can be severely biased in comparisons of jail and prison populations, as discussed in Metzner [3] and O'Toole [4]. This bias is due to a significantly larger number of at-risk inmates in the jail versus the prison, even when they have the same ADP. This bias leads to much higher suicide rates in local jails than in State prisons when using the ADP methodology: in 2002, the national ADP suicide rate in local jails was over 3 times the rate in State prisons [2]. The specific ratio of jail and prison ADP suicide rates will depend on the ratio of the required number of inmates to make an inmate-year for the jail and prison systems. Since this ratio is dependent on the average length of stay in the jail and prison systems, it is an inappropriate measure to compare the risk of suicides in jails and prisons.

For similar reasons, the ADP is an inadequate statistic to compare jail and local populations. As discussed above, the inmates at risk in the San Diego jail system is approximately 17 times as large as the ADP. For the local population, the number of people at risk is the same as the ADP (assuming that the population is relatively stable). Using the at-risk suicide rate calculation, a San Diego jail inmate is about one-half as likely to die by suicide than the average San Diego resident [10, 11]. Thus, suicide rates are actually much lower in the San Diego jail than in the general population, a strikingly different conclusion than that reached by DRC.

As discussed in the BJS Special Report [2], the demographics of inmate populations do not reflect those of the resident population; inmates are predominately male and younger than in the general population, two characteristics that lead to higher suicides rates. To improve the comparison of suicide risks, the resident populations can be standardized by age, race and gender to match the proportions seen in jails. When resident suicide rates are standardized, a San Diego jail inmate is even less likely to die by suicide than the average San Diego resident.

Why Should Suicide Risks be Standardized?

The demographics of inmate populations also differ across the California jail systems. San Diego has the highest percentage of white inmates (46%) of all the 10 largest jail systems in California for the period 2010-2016 (based on arrest data [12]). Los Angeles had the lowest percentage, with 21% white inmates. These racial discrepancies are important because white inmates are 6 times as likely to commit suicide as African American inmates and 3 times as likely to commit suicide as Hispanic inmates [2]. Discrepancies in racial distributions alone could contribute to a higher calculated suicide rate in San Diego. To fairly compare these ten counties, we standardize the rates (as recommended by the BJS [2]) to the same racial distribution. Specifically, we standardize each jail system's suicide rates to the average racial proportions of the ten counties.

What years and counties should San Diego be compared to?

The primary comparison of jail inmate suicide rates presented in the DRC report [1 Figure on p. 3] is for the period 2014-2016, comparing San Diego to five other "similarly sized California counties". Why are these three years used rather than the 2010-2017 period discussed at the top of the page? The set of years compared appears to be cherry-picked to support the desired conclusion. Page 4 of the report contradictorily states: "suicide rates are most meaningful when viewed over a sustained period of time." Metzner [3] recommends an assessment of the adequacy of a suicide prevention program be assessed over at least a five-year period. Our analysis covers the period 2010-2017. We include the largest 10 California county jail systems and show that San Diego's suicide rate is similar to other California county jail systems and that it is not statistically significant from the average.

Causal Interpretations (Are the USA Winter Olympics Training Programs in Crisis?)

The DCR report compares the suicides rates of the San Diego jail system to (1) other California county jail systems, (2) to the California prison system, (3) to the national jail suicide rate, and (4) to the general San Diego population. All of these comparisons are based on the ADP suicide rate, which has several serious flaws as discussed above. However, there are other differences in these populations that make for unfair comparisons. To conclude that there is a crisis in the suicide prevention policies would require a fair (apples-to-apples) comparison and a demonstration of a correlation between suicide prevention policies and suicide rates. The suicide prevention policies of the different jail systems are not discussed or compared; thus, concluding that the cause of the differences in suicide rates is due to policy is pure speculation.

To illustrate the flaws in the logic of concluding that there is a suicide prevention policy problem based solely on a discrepancy in suicide rates, we revisit the 2018 Winter Olympics. With a total of 39 medals, Norway dominated the 2018 Winter Olympics, surpassing the USA's total of 23 medals. Calculating a per-capita medal rate increases the discrepancy in the medal-win rates for the two countries. Yet, no one is calling the USA Winter Olympic Training Program a failure or "in crisis". Why not? If we use the same logic used in the DRC report, we should conclude that the lower win rate in the USA must be the result of a failed training program.

Most winter sports enthusiasts recognize that there are discrepancies between the two countries (such as genetics and cultural differences that encourage more winter Olympics athletes), which are more likely to account for the differences in medal wins.

Similarly, when comparing San Diego Jail inmates to inmates in other California counties, the California prison system, the national jail system or to San Diego County residents, one should recognize that cultural, demographic, and length-of-stay differences between these populations may explain the differences in suicide rates. To attribute the differences in suicide rates to policies requires a rigorous effectiveness analysis that correlates suicide rates to policies.

A Crisis by Any Measure or a Propagation of Statistical Errors?

The statistics cited in the DRC report originated in a series of *CityBeat* articles published by Kelly Davis. These statistics were then replicated in the Grand Jury Report [9] and in the DRC report [1]. Kelly Davis began her critique of San Diego's jail system using suicide numbers and then compared the ADP suicide rate to other counties. San Diego Sheriff's Department spokesperson Jan Caldwell pointed out the flaw in comparing ADP suicide rates in 2013 [10], yet Kelly Davis insisted upon

using the flawed ADP calculation in her articles because "San Diego County fares much better" using the at-risk rate calculation [11]. It is unfortunate that the ADP risk measure was originally chosen on the basis of how it makes San Diego look in comparison to other counties rather than on its inherent attributes and biases. The fact that the error has been replicated by other authors demonstrates a crisis in statistical understanding.

A rigorous statistical analysis of the effectiveness of the San Diego Jail system suicide prevention policy would have the following components:

1. The at-risk suicide rate calculation should be used instead of the ADP calculation. Comparing the average daily population (ADP) suicide rates across jails with differing numbers of inmates at risk is not a fair comparison; one should expect higher numbers of suicides in jails with larger numbers of inmates at risk.
2. The set of California counties and the set of years compared should not be cherry-picked to support the desired conclusion.
3. Comparisons across jail systems with diverse inmate populations should account for that diversity when it affects the suicide rates; specifically, because Caucasians, African Americans and Hispanics have drastically different suicide rates, the racial distribution of each jail system should be accounted for in the comparison.
4. The imprecision in estimating suicide rates using small numbers of suicides should be acknowledged; a statistical comparison that clearly demonstrates the errors in estimation should accompany any comparison of rates.
5. Inferring that the cause of a difference in suicide rates is due to the suicide prevention policy requires at a minimum a demonstration of the correlation of suicide prevention policies and lower suicide rates.

Our analysis estimates the suicide rates (per 100,000 inmates at risk) of the ten largest California county jail systems, standardized to the average racial distribution. We also estimate the 95% confidence intervals for the suicide rates (see Figure 2). Our statistical analysis shows that San Diego does not have the largest suicide rate and that its rate is not statistically different than the average rate. The only county that is statistically significantly different than the average is Orange County, which has a lower rate than the average.

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INMATES AT RISK SUICIDE RATES
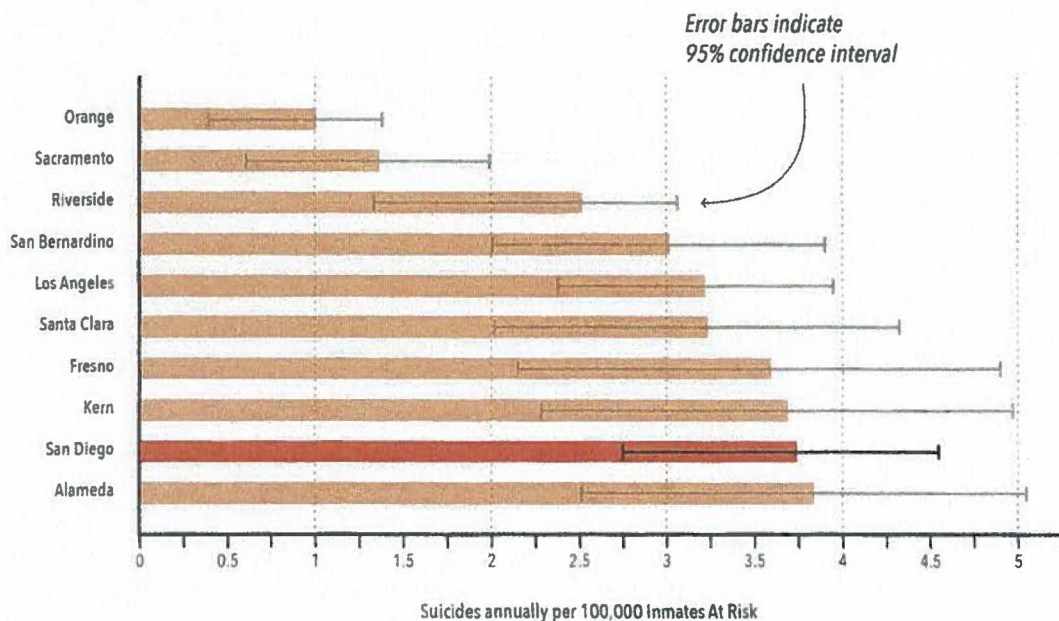Standardized for average racial distribution, 2010-2017

Figure 2: A comparison of the suicide rates (standardized inmates at risk calculation) of the ten largest California counties for 2010-2017. Error bars represent the 95% confidence intervals for the suicide rate estimates. Only Orange county has a suicide rate that is statistically significantly different than the average.

Because the DRC report uses inappropriate statistics and does not conduct a statistical comparison of the rates and a more rigorous analysis (see Figure 2) finds that San Diego has a suicide rate similar to other California county jail systems, one cannot conclude that there is "a crisis by any measure" in San Diego County jail system.

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