Understanding Disparity Ratios: ODI™, DDI™, FDI™, ADI™, ISDI™ and AHSDI™

Before reviewing reports, it may be helpful to understand ComplianceTech’s trademarked disparity indices:

ComplianceTech transforms the HMDA data into fair lending indices (ODI™, DDI™, FDI™, ADI™, ISDI™ and AHSDI™) that can serve as a useful barometer of potential lending disparities. It is important to note that these indices are not evidence of disparate treatment and/or disparate outcomes by themselves. It is best to consider them as a sign that further investigation is warranted. It is also worth noting that the indices are most valuable when used to compare one lenders’ performance against another similarly situated lender (i.e. same size, similar underwriting standards, etc.) or a group of similarly situated lenders.

**Origination Disparity Index (ODI™)**

The Origination Disparity Index (ODI™) is a function of the origination rate. It is a ratio of the White origination rate divided by a minority groups’ origination rate. It is a measure of the likelihood of a minority application being originated relative to the likelihood of a White application being originated. For example, if 85% of White applications result in a loan while 72% of Hispanic applications result in a loan, then the Hispanic ODI™ is 85% / 72% = 1.18. Taken at face value the ratio in this example suggests that White applicants are 1.18 times more likely to be originated than Hispanic applicants.

An ODI™ of 1.00 indicates parity. An ODI™ greater than 1.00 indicates a disparity. A ODI™ less than 1.00 also indicates a disparity of a different type. Disparity ratios less than 1.00 are referred to as negative disparity and suggest (on its face) that a minority group fared better than Whites.

The ODI™ simply indicates the extent to which disparity caused by denial or fallout may exist. Therefore, the ODI™ can be used as a bottom-line measuring tool for loan production personnel.

Origination rates vary by type of lender, geographic region, channel of business, and the degree of participation in government or subprime lending programs. For example, conventional lenders originate at a higher rate than government lenders. Lenders with effective pre-qualification second look and CRA-type lending programs originate at higher rates than those without such programs. In addition, we know that sub-prime lenders have low overall origination rates and that they vary very little by race.
ODI™ was created to measure loan closing performance and to counteract the narrow focus (of some analysts, researchers, and authors) on denial rates and denial disparities. Origination disparity analysis seeks to reveal how well lenders manage an application to a favorable conclusion.

**Denial Disparity Index (DDI™)**

The Denial Disparity Index (DDI™) is a comparison of denial rates for a specific minority group in relation to White denial rates. This has frequently been called the HMDA denial rating by the media when ranking the perceived fairness of lenders. The ratio suggests the degree to which a specific minority group may have received unequal treatment in the credit approval process.

DDI™ is calculated by dividing the denial rate of a minority group by the White denial rate. For example, if the denial rate is 20% for Blacks and 10% for Whites, the DDI™ for Blacks is 20% / 10% = 2.00.

Taken at face value the ratio in this example suggests that Blacks are two times more likely than Whites to be denied loans. A Black DDI™ of less than 1.00 would show that the lender denied Whites at a greater rate than Blacks. As with all ComplianceTech disparity indices, the ideal DDI™ of 1.00 indicates parity. Again, if the DDI is between 0.00 and 1.00, we call it a negative denial disparity index; a situation where minority applicants are less likely to be denied than White applicants.

With the exception of Asians, minority denial rates are generally higher than White denial rates. Asian denial rates tend to be equal to or lower than White denial rates. Meanwhile, Black and Hispanic denial rates tend to mirror each other, albeit, Black denial rates tend to be higher.

In the past, lenders active in FHA/VA programs tended to have higher minority denial rates. This trend, however, appears to be changing, particularly with respect to home purchase loans. Conventional loans acquired through 3rd party correspondents tend to have lower minority denial rates (however, fewer minority applications are received). Banks tend to have lower minority denial rates than mortgage companies. Banks with a targeted CRA loan product tend to have a lower minority denial rate than banks without such a product. Effective second review programs tend to lower DDI's modestly.

**Fallout Disparity Index (FDI™)**

"Fallout" is defined as applications that do not close for reasons other than denial. This includes applications that were approved but rejected by the applicant, withdrawn by the applicant or incomplete. The Fallout Disparity Index (FDI™) was created to act as a measure of possible loan discouragement and/or quality of assistance. This disparity index reveals how well the lender manages an application to approval or denial.
The FDI™ is the ratio of the minority fallout rate divided by the White fallout rate. For example, if 30% of Native American applicants fall out while 20% of Whites fall out, the FDI™ is 30% / 20% = 1.5.

An FDI™ below 1.00 (i.e., negative) means that Whites have a higher fallout rate than minorities. As with all ComplianceTech disparity indices, the ideal FDI of 1.00 indicates parity.

Fair lending regulators are interested in tracking rates of incomplete and withdrawn applications to determine if minority applicants are being discouraged in the loan application process. ComplianceTech uses the FDI™ to measure this phenomenon and to reveal processing inefficiencies or other customer service issues.

Unlike the denial disparity ratio, FDI™ is normally small in relative terms. There may be numerous factors impeding lenders from obtaining and approving minority applications. However, once an application is taken, the normal course of action is approval or denial. Anything short of one of these decisions is counter-productive and an opportunity cost associated with wasted processing time and effort.

**Application Disparity Index (ADI™)**

The Application Disparity Index (ADI™) is a comparison of application rates for a racial group in relation to that group’s percentage in the population. The ADI™ can only be used in analyses at the county level. The disparity index is calculated using the 1990 U.S. Census Bureau population statistics.

ADI™ is calculated by dividing a racial group’s percentage of a lender’s applications by the racial group’s percentage in the population. (Adjusted ADI™ ignores applications where the race is Unknown or NA when calculating total applications.) For example, if Blacks comprise 4.29% of a lender’s applications in Los Angeles County, CA and Blacks represent 10.55% of the population in Los Angeles County, CA then the ADI™ for Blacks (for this lender, in this county) is 10.55% / 4.29% = 2.46. This suggests that Blacks are under-represented among the lenders’ activity in Los Angeles, CA. Their share of Black applications is 2.46 times less than their population percentage warrants.

**Spread Incidence Index (SDI™) and Average HMDA Spread Index (AHSDI)**

These reports analyze the incidence of a spread occurrence (i.e., the quantity of spreads) and the magnitude of spreads (i.e., average spread). A spread disparity index is calculated for both the incidence and magnitude of spreads. The spread disparity index is the minority incidence percent and average spread percent divided by the White
incidence or average spread percent. To distinguish between the two SDI’s we call one the “Incidence Spread Disparity Index (ISDI)” and the other the “Average HMDA Spread Disparity Index (AHSDI™)”. An SDI of 1.00 is an indication of parity. If the minority SDI is greater than 1.00 it indicates a greater incidence or higher average spread than Whites. If the minority SDI is less than 1.00 it indicates that Whites had a lower incidence or lower average spread than minorities.