Appendix A: Technical Notes 2007

This appendix provides two sets of technical notes. The first set describes statistical terms and related analytic conventions used in *The Health of Washington State, 2007*. This set also explains elements of the charts and graphs. The second set of notes provides technical details for many of the major sections in each chapter. Each set of notes lists topics alphabetically.

General Technical Notes

Section Notes

General Technical Notes

Charts and Graphs

Where possible, authors used line graphs to portray changes in health status or risk and protective factors over time and bar charts to present differences among subgroups by age and gender, race and Hispanic origin, income, education, and county. On the line graphs, shaded areas around lines represent 95% confidence intervals for the point estimates represented by the line. On the bar charts, horizontal lines with short vertical lines at either end represent the 95% confidence interval for the point estimate represented by the bar. In the text, authors described variation depicted in the graphs and charts as differences only if the differences were statistically significant. Thus, while two lines or two bars might not look very different, if the text or county charts highlighted them as different, this meant that the differences were statistically significant. Conversely, sometimes two lines or bars might look different, but the differences were not statistically significant. Most often, variation was not statistically significant except when the author stated that two rates differed or when confidence intervals did not overlap. See Confidence Intervals and Statistical Significance for a general discussion of the use of confidence intervals and statistical testing in *The Health of Washington State, 2007*.

To increase the number of events or survey respondents, where possible bar charts depict data for three years combined. Charts do not depict subpopulations with fewer than 20 events or fewer than about 50 survey respondents. Even when omitting subpopulations with small numbers of events or few survey respondents, rates for some subpopulations might be high or low because of an unusual number of events in one year. In these cases, the bar might not reflect the general pattern. Thus, readers are advised to assess additional data before using the bar charts for policy decisions and resource allocations.

Additional detail on charts and graphs is provided in Section Notes, below.

Confidence Intervals and Statistical Significance

Confidence Intervals

Confidence intervals provide a measure of how much a rate, percent, or other point estimate might vary due to random factors or chance. They do not account for several other sources of uncertainty, including missing or incomplete data, bias resulting from non-response to a survey, or inaccurate data collection.

Confidence intervals are used with survey data to account for the difference between a sample from a population and the population itself. With few exceptions, authors included 95% confidence intervals for all survey data, such as data from the

Behavioral Risk Factor Surveillance System, the Pregnancy Risk Assessment Monitoring System, and the Healthy Youth Survey. A 95% confidence interval captures the true value of the point estimate in 95 out of 100 cases. For ease of reading the line graphs, survey data for the United States does not include confidence intervals. The confidence intervals for U.S. data were often very small because of large national sample sizes. (Confidence intervals are generally large for small sample sizes and decrease as the sample size increases.) Additionally, the reader can observe the amount of annual variation on a line graph showing annual point estimates.

Unlike surveys that select a sample of the population to represent the population as a whole, population data capture nearly all events in a population. For example, birth and death certificates record information on almost every birth and death in Washington. Although population data are not subject to random fluctuation due to differences between the sample and the population it represents, confidence intervals can be used with population data to account for uncertainty that arises from natural variation, such as the random variation that occurs when analyzing the continuous phenomenon of time as discreet years. Chapter authors had discretion about including confidence intervals for population data. Most often, authors did not include confidence intervals on time trend line graphs. The annual point estimates, themselves, depict year-to-year variation, and the confidence intervals were relatively small, because these graphs most often depicted data for all state residents. Authors often included confidence intervals on bar graphs, because variation could be large due to the relatively small sizes of some subgroups and variation over time is not evident from the bars themselves.

For ease of data presentation to a non-technical audience, authors usually presented confidence intervals in the text as plus or minus (±) the standard error multiplied by 1.96. Authors sometimes used more exact methods to portray confidence intervals in the charts and graphs. The line graphs have shading around the line to portray the 95% confidence interval; the bar charts use horizontal lines with small vertical lines showing the upper and lower limits of the interval.

Data analysts used SAS/SUDAAN or STATA software packages to calculate exact confidence intervals or standard errors that were then used to develop symmetrical confidence intervals.

Methods used to calculate confidence intervals were consistent with the Washington State Department of Health Guidelines for Using Confidence Intervals for Public Health Assessment (http://www.doh.wa.gov/Data/Guidelines/ConfIntguide.htm).

Statistical Testing

Statistical tests can be used to determine whether differences between two rates, percents, or other point estimates might have occurred by chance. Unless otherwise noted authors considered differences to be statistically significant when statistical testing indicated that in 95 cases out of 100, the difference would not be due to chance or coincidence. Authors reported only statistically significant differences as differences. If two estimates were not statistically significantly different, the estimates were treated as similar.

For time trend analysis, authors used the statistical tests built into the Joinpoint software. For other comparisons, different authors approached significance testing differently, but all authors used statistical tests that assumed independence between groups. This assumption was violated in comparing counties to the state as a whole and Washington State to the United States. Because Washington is relatively small compared to the United States, lack of independence should not substantively affect the findings. For large counties in Washington, especially King County, there could be instances where these tests failed to find statistical significance where differences really existed. Contact chapter authors for more information on statistical testing for specific chapters.

Relationship between Confidence Intervals and Statistical Testing

Confidence intervals can sometimes substitute for statistical testing in determining statistical significance. Two estimates are statistically significantly different if the confidence intervals do not overlap. When the confidence intervals overlap and the interval for one estimate includes the other estimate, the two estimates are not statistically significantly different. If the confidence intervals overlap, but neither interval includes the other estimate, a formal test of statistical significance is needed to determine whether the two estimates are statistically significantly different.

Missing Data

Missing data result either when records do not include all of the information required or when entire records are missing, such as when a population-based dataset fails to capture every event or when people selected for a sample do not participate. Rates estimated from datasets with large amounts of missing data can result in bias, such that the estimated rates do not reflect the true situation. Bias occurs only when the data are not missing completely at random and the amount of missing data is relatively large.

For datasets used in more than two chapters of *The Health of Washington State, 2007,* Appendix B includes information about completeness of population-based data and response rates for surveys. Other than data for some notifiable infectious diseases, population-based data included in *The Health of Washington State, 2007* captures all but 1% to 5% of records. Response rates to major surveys are generally low, with non-response as high as about 50%. Appendix B discusses issues of bias associated with specific surveys. Authors included only survey data that did not have a high likelihood of bias due to non-response.

If authors suspected bias due to missing values, they conducted bias analysis. If these analyses concluded that bias was likely, authors conducted sensitivity analysis to explore the extent of potential bias. They reported the ramifications of potential bias or explained that data could not be reported because of bias due to missing data.

Rates

Crude Rates

A crude rate is the number of events (such as deaths) in a specified time period divided by the number of people at risk of these events (typically, a state or county population) in that period. This figure is generally multiplied by a constant such as 1,000 or 100,000 to get a number that is easy to read and compare, and thus, the rate is reported as “per 1,000” or “per 100,000.” A rate per 100 is the same as a percent. *The Health of Washington State, 2007* generally reported rates of infectious diseases as crude rates. Crude rates adjust for differences in population size but not differences in population characteristics, such as age.

Age-Adjusted Rates

People of different ages are more or less susceptible to different diseases. People of different ages are also more or less likely to engage in healthy or unhealthy behaviors. Adjusting rates for differences in age distributions helps us to understand whether there are differences among groups independent of their age structures. Age-adjustment also allows us to compare rates in the same population over a period of time during which the population structure might have changed.

Except for SatScan, which uses an indirect method of age-adjustment (see Geographic Variation), data analysts computed age-adjusted rates by the direct method; they multiplied the rate for a specific age group in a given population by the proportion of people in the same age group in the 2000 U.S. standard population and then added across age groups. Most often, data analysts used the “10-year” standard age groups. Cancer incidence data were age-adjusted using five-year age groups for consistency with the National Cancer Institute. For cervical cancer, however, incidence by race and Hispanic origin used the 10-year groups. These groupings and the corresponding proportions are shown in http://www.doh.wa.gov/Data/Guidelines/Rateguide.htm#standpop. For age-adjustment on indicators that did not include the entire age range of the 10-year standard groups, data analysts used the age groupings outlined in *Tracking Healthy People 2010* (http://www.healthypeople.gov/Document/tableofcontents.htm#tracking), page A-33.

Most national, state, and local organizations in the United States adjust to the 2000 U.S. standard population. Documents published in the United States before 2000, however, often used the 1940 or 1970 U.S. standard populations, and documents published outside the United States generally use other standards. When making comparisons, readers must be careful to compare age-adjusted rates that use the same standard population. Moreover, age-adjusted rates should not be compared to rates that are not age-adjusted. Age-adjusted rates have no absolute meaning; they are derived from hypothetical populations and are useful only for comparing with other rates calculated in the same manner.

For more information on crude and age-adjusted rates see Washington State Department of Health Guidelines for Using and Developing Rates for Public Health Assessment (http://www.doh.wa.gov/Data/Guidelines/Rateguide.htm).

Small Numbers

Statistics developed when there are few events or when the population in which the events occurred is relatively small risk breaching confidentiality.

Additionally, interpreting data based on few survey respondents or a small number of events can be difficult, because random fluctuation can be relatively large. As the amount of random fluctuation increases, the predictive value of a statistic generally decreases. For example, with a large annual fluctuation, knowing a rate for one year might not allow us to reliably anticipate the rate for another year. This instability makes it difficult to use rates based on small numbers for program planning or policy development. In fact, considerable caution should be used in interpreting any data where the number of events is small. (See Confidence Intervals and Statistical Significance and Charts and Graphs.)

To ensure confidentiality and to provide relatively stable estimates, where possible, data analysts combined three years of data to increase the numbers of events or survey respondents for sub-populations, such as when presenting data by race, income, education, or county. Moreover, authors only presented statistics for subpopulations (such as county or race group) that had a minimum of about 20 events or 50 survey respondents. For additional information, see the Washington State Department of Health Guidelines for Working with Small Numbers (http://www.doh.wa.gov/Data/Guidelines/SmallNumbers.htm).

Section Notes

Education

Where possible, authors presented health and related information by level of education for three categories: high school graduate or less, at least some post-secondary education but not a four-year college degree, and a four-year college degree or higher. On the 2006 Behavioral Risk Factor Surveillance System (BRFSS), about 29% of Washington adults ages 25 and older were in the least educated group, 31% in the middle group, and 41% in the highest group (about ±1% for each group). These categories differ from those used in the national *Healthy People 2010*: less than high school, high school graduate or equivalent, and at least some post-secondary education. The *Healthy People 2010* categories do not work well for Washington, because average levels of education are higher in Washington than in the United States as a whole. The 2006 BRFSS showed about 7%, 22%, and 71% (± <1% for each category) of Washington residents in the lowest, middle, and highest *Healthy People 2010* categories, respectively.

Authors followed *Healthy People 2010* guidelines for restricting analyses for education to selected age groups. (See *Tracking Healthy People 2010*, http://www.healthypeople.gov/Document/tableofcontents.htm#tracking.) Unless otherwise indicated, data by education do not include records of people younger than 25 years. This restriction considers that many people younger than 25 years old have not had time to complete their educations. This restriction is also consistent with the U.S. Census, which reports the educational levels for adults ages 25 and older. For death data, *Healthy People 2010* further restricts analysis to people younger than 65 years when they died due to concerns about quality of information for older decedents. Because of changes in recording of education on death certificates beginning in 2004, authors used 2004-2005 death records when reporting death by educational level. (See Appendix B, Death Certificate.)

Many chapters include bar charts depicting the relationship between education and health or related factors. Generally, a horizontal line with a small vertical line at each end depicts the 95% confidence interval for the rate for each education category. As discussed under Confidence Intervals and Statistical Significance, authors referred only to differences that were statistically significant as differences. Where possible, the bar charts includes data for three years combined to increase numbers, and hence, precision and stability of the rate. (See Small Numbers and the caution in Charts and Graphs.)

Geographic Variation

Where possible, authors presented data by county and by region independent of geopolitical boundaries. Regions included combinations of whole or parts of counties, as well as areas within counties. There was often good correspondence between counties and regions with relatively high or low rates. The county and regional patterns could differ, however, especially if there was substantial variation in rates in sub-county areas.

County Data

Many chapters include rates by county and bar charts showing county variation. The darkest bars indicate counties with rates that were statistically significantly higher than the state; the white bars indicate counties with rates that were statistically significantly lower than the state. Generally, a horizontal line with small vertical line at each end depicts the 95% confidence interval for each county rate, percent, or other measure. As discussed under Confidence Intervals and Statistical Significance, authors referred only to differences that were statistically significant as differences. The bar charts do not include counties with fewer than 20 events for population data or fewer than about 50 respondents to surveys. Where possible, the county bar charts includes data for three years combined to increase numbers, and hence, precision and stability of the rate. (See Small Numbers and Charts and Graphs.)

The counties with the largest numbers of people (that is, King, Pierce, and Snohomish) strongly influence state rates. The impact of these large, urban counties needs to be considered when comparing counties to the state as a whole.

County-level hospitalization data are under-reported for counties where a large proportion of the population uses naval hospitals in Bremerton and Oak Harbor or the Madigan Army Medical Center hospital. The Washington State Department of Health, Center for Health Statistics obtained hospitalization data from Madigan and the naval hospital in Bremerton after production of data for *The Health of Washington State, 2007*. These data show that for 2002-2004 combined almost 15% of hospitalizations in Kitsap County were at those hospitals. Given this relatively large amount of missing data, county charts for hospitalization do not include Kitsap County. About 10% of Pierce County and 7% of Thurston County hospitalizations for 2002-2004 were at these hospitals, and so hospitalization rates for these counties might be underestimated depending on the specific cause of hospitalization. County charts do not include data from Island County, because a large proportion of residents likely use the naval hospital in Oak Harbor. County charts also exclude Asotin and Garfield counties because a large proportion of residents in these counties use hospitals in Idaho.

Regional Data

For indicators using birth or death data, the Washington State Department of Health Center for Health Statistics (CHS) ran the National Cancer Institute's SatScan program to determine geographic regions where the ratio of the observed to expected number of events was statistically significantly higher or lower than one, the ratio when there is no difference between observed and expected. SatScan does this by combining the number of events in all conceivable combinations of small adjacent geographic areas to determine the observed number of events. For a given combination of small areas, SatScan calculates an expected number of events, based on rates in the rest of the geographic unit in which the small area is located. For this calculation, SatScan uses indirect standardization. For *The Health of Washington State, 2007,* standardization included adjustment for age and gender. The CHS used census tracts as the unit for the small areas and Washington State as the larger geographic unit. CHS ran the analyses for 2001-2005 separately and for the entire period combined. Because clusters identified through SatScan can vary from year to year, authors provided maps showing clusters only if the analyses for each of the five years separately and for the five years combined provided a similar picture. Additionally, the maps depict clusters only where the observed to expected ratios showed worse health in the small area than in the remainder of the state.

Information on SatScan is available at http://srab.cancer.gov/satscan/. See also, Kulldorff M, (1997), A spatial scan statistic, *Communications in Statistics Theory and Methods, 26*(6), 1481-1496 and Jemal A, Kulldorff M, Devesa SS, Hayes RB, & Fraumeni JF Jr. (2002), A geographic analysis of prostate cancer mortality in the United States, 1970-89. *International Journal of Cancer, 101*(2), 168-174.

Intervention Strategies

In determining what interventions are effective, authors were urged to follow the practices of the *Guide to Community Preventive Services (Community Guide)*. The *Community Guide* recommends for or against specific interventions on the basis of systematic reviews of research studies and ranks the suitability of studies as follows:

1. Most suitable: studies with concurrent comparison groups and prospective measurement of exposure and outcome
2. Moderate suitability: studies with retrospective designs or multiple pre or post measurements but no concurrent comparison group
3. Least suitable: single pre and post measurements and no concurrent comparison group OR exposure and outcome measured in a single group at the same point in time.

Additional information on methods used by the *Community Guide* to recommend evidence-based interventions is available at http://www.thecommunityguide.org/.

As a rule, authors needed to have multiple studies in categories 1 and 2 indicating the same outcome to conclude that the intervention was effective. Given the resources needed to thoroughly evaluate the scientific literature to determine efficacy, authors could rely on review articles or documents from well-established scientific bodies, such as the *Community Guide*, the U.S. Institute of Medicine, or the Cochrane Collaborative. If there were proven interventions from studies in categories 1 and 2, authors needed to consider the extent to which the intervention could be generalized to Washington's population and the cost-effectiveness of the intervention in the real world.

In instances where there were some but not a sufficient number of studies in categories 1 and 2 to make strong statements of effectiveness, authors could cite interventions that look promising based on one or two category 1 or 2 studies. If studies fell into category 3 or if there were no formal studies, authors stated that there were not interventions with proven efficacy. But if other public health authorities, such as The U.S. Centers for Disease Control and Prevention, recommended an intervention, or if there were broadly accepted reasons (such as logic models supporting the intervention) for pursuing particular interventions in the absence of empirical proof of effectiveness, the authors summarized the case for such interventions. In these instances, authors were requested to be clear that the recommendations were not evidence-based but rather represented best practices or expert opinion in areas where evidence-based interventions are lacking.

Race and Hispanic Origin

For some diseases, such as malignant melanoma or sickle cell anemia, race and ethic origin serve as markers for genetic factors. Most often, however, differences in health by race and ethnic origin result not from genetic differences but from the effects of complex social, cultural, economic, and political factors. Where possible, *The Health of Washington State, 2007* highlights disparities in health status or risk factors by race and Hispanic origin. The Washington State Department of Health (Department) supports the national *Healthy People 2010* goal of eliminating these disparities. To achieve this goal, we need first to know the extent of the disparities and which groups are most affected. Where possible, authors presented information on what might be the root causes of the disparities, such as disparities in income, education, cultural practices, exposure to toxins, or occasionally, genetic factors.

The U.S. Census Bureau uses the concept of race to reflect self-identification and not to denote any clear-cut scientific definition of biological stock. As with the U.S. Census, race as collected by the systems used to generate data for *The Health of Washington State, 2007* does not denote a scientific definition of biological stock. For some systems, the race data reflect self-classification by people according to the race with which they most closely identify. For other systems, someone else reports race. Reports by someone else vary in how well they reflect the race the person, him or herself, would have chosen. There is often good correspondence when those reporting know or knew the person well, such as when next-of-kin report race on death certificates. At times, someone who does not know the person well makes a judgment, such as when a health care worker records race in a medical chart without first asking. In these instances, the race might not represent the race with which the person most closely identifies.

Ethnicity, as used by the U.S. Census Bureau, refers to "the ancestry, nationality group, lineage, or country of birth of the person or the person's parents or ancestors before their arrival in the United States." People of Hispanic origin have their ancestry or come from a Spanish-speaking country such as Mexico, Cuba, Spain, or the Spanish-speaking countries of Central or South America. People of Hispanic origin can be of any race.

Federal guidelines issued in 1997 specify five categories for collecting data on race and allow for reporting of more than one race. The five categories include American Indian and Alaska Native, Asian, black or African American, Native Hawaiian or other Pacific Islander, and white. Most states, including Washington, adopted these conventions in 2003. Prior to the current guidelines, federal guidelines grouped Asians and Pacific Islanders.

Following national guidelines, most data systems in Washington first ask about Hispanic origin and then ask about race, and most systems allow people to select more than one race. For example, the Behavioral Risk Factor Surveillance System asks, "Are you Hispanic or Latino?" and then asks "Which one or more of the following would you say is your race?" Appendix B provides detail on how data systems collect race and Hispanic origin.

Federal guidelines for presenting data by race and Hispanic origin are less explicit than for data collection. Many federal documents present data for a limited number of race and Hispanic origin categories due to concerns about data quality or the small number of people in some groups. *The Health of Washington State, 2007* generally presents data for people of Hispanic origin and divides non-Hispanics into four race groups: American Indians and Alaska Natives, Asians and Pacific Islanders, blacks, and whites. Asians and Pacific Islanders were grouped because of the relatively small numbers of Pacific Islanders and uncertainty about the accuracy of the population counts needed to develop rates for Pacific Islanders. With a growing number of Pacific Islanders in Washington, the Department needs to assess the quality of data for Pacific Islanders and work toward providing data for Asians and Pacific Islanders separately in future reports.

Although Washington data systems allow for reporting of more than one race, most authors reported data for single race groups only. On the 2000 U.S. Census, about 200,000 (3.6%) Washingtonians reported more than one race, but the largest specific combination of races, American Indian and Alaska Native and white, represented about 48,000 people, 0.8% of Washington's population. Thus, the number of people in any group defined by combinations of two races is too small to provide meaningful data. Research does not support combining people of diverse of multiple races into a single group. [Parker, J. (2006). The role of reported primary race on health measures for multiple race respondents in the National Health Interview Survey, Public Health Reports, 121: 160-168.] Additionally, for some data sources, the recording of more than one race seemed incomplete due to the relatively small percentage of records with more than one race compared to the state average.

For some data sources, presenting data for a single race meant that records with more than one race were excluded. For other datasets, data analysts used various conventions to assign people reporting multiple races to a single race group. Appendix B provides detail on the treatment of multiple race and conventions used to assign a single race to people reporting multiple races for the major data sources used in *The Health of Washington State, 2007*.

Some chapters did not present Washington data by race and Hispanic origin, either because the data source does not collect high quality information on race and Hispanic origin or because the numbers of events for racial and Hispanic origin subgroups were too small for meaningful analysis. In these instances, authors often provided information from the scientific literature, usually based on national data. This information should be interpreted with caution. Racial patterns in Washington might be different from those seen elsewhere. Nonetheless, large differences by race or Hispanic origin seen nationally or elsewhere in the United States are likely to reflect important disparities in Washington.

In many chapters, authors used bar charts depicting rates for the four race groups and Hispanic origin. Generally, a horizontal line with small vertical line at each end depicts the 95% confidence interval for each group's rate. As discussed under Confidence Intervals, authors referred only to differences that were statistically significant as differences. The bar charts do not include groups with fewer than 20 events for population data or fewer than about 50 respondents to surveys. Where possible, the charts include data for three years combined to increase numbers, and hence, precision and stability of the rate. (See Small Numbers and Charts and Graphs.)

For information on the collection and use of race and Hispanic origin in specific data systems, see Appendix B. Also see the Washington State Department of Health Guidelines for Using Racial and Ethnic Groups in Data Analyses (http://www.doh.wa.gov/Data/Guidelines/Raceguide1.htm) for a more detailed discussion of these issues.

Time Trends

To determine whether rates and frequencies were increasing, decreasing, or staying the same over time, data analysts used the Joinpoint software developed by the National Cancer Institute. (http://srab.cancer.gov/joinpoint). Trends were discussed as increasing or decreasing only if the changes were statistically significant. Over a long period of time, such as 1980-2005, even small changes can be statistically significant.

Unless otherwise noted, tests of trend were for 1980 (or the earliest year of data available after 1980) through the most recent year of available data. (See Appendix B for years of availability for specific data sets.) Trend analysis for mortality data can be complicated by changes in the coding for causes of death that were implemented in

1999. For causes of death in *The Health of Washington State, 2007*, however, these changes did not substantively affect trends from 1980-2005. (See

Appendix B, Death Certificate.)

Year 2010 Goals

Healthy People 2010 (http://www.healthypeople.gov/) provides national health promotion and disease prevention objectives. These objectives were developed under the aegis of the U.S. Department of Health and Human Services in collaboration with other federal, state, and local agencies. The process of developing *Healthy People 2010* also included for public comment. *The Health of Washington State, 2007* covers topics that correspond to objectives in *Healthy People 2010*. Where possible, authors provided information on whether Washington is on track for reaching the national 2010 targets. *Healthy People 2010* first established targets in 2000, but the *2005 Midcourse Review* (http://www.healthypeople.gov/data/midcourse/html/default.htm) revised some targets. Authors noted when the target is based on the 2005 revisions.

Readers must be careful when assessing Washington's progress toward nationally established targets. Many authors used indicators that were not identical to those used in establishing the national goals.

- Where possible, authors used comparable definitions when assessing progress toward *Healthy People 2010* targets, even though the definition differed from that of the main indicator used elsewhere in the chapter. For example, the primary indicator for colorectal cancer was defined following the National Cancer Institute's coding standards. When comparing to *Healthy People 2010*, however, the author defined colorectal cancer deaths as in *Healthy People 2010,* using coding standards of the U.S. Centers for Disease Control and Prevention's National Center for Health Statistics.

- For some *Healthy People 2010* targets, there were no comparable Washington data. Sometimes, however, authors identified a relationship between available data and the *Healthy People 2010* indicator. In these instances, authors were able to estimate progress toward the national target. For example, *Healthy People 2010* establishes a target for the percent of the population eating three *servings* of vegetables each day. Washington survey data provide information on the number of *times* people eat vegetables each day. Research suggesting a relationship between servings and times allowed an estimate of progress.

In addition to assessing progress toward the national *Healthy People 2010 targets,* chapters provided progress toward state targets for 2010 where these have been established.