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Day-of-Week Variation of Rainfall and PM₁₀ in Death Valley National Park

James A. Miller

California State University, Fullerton

Abstract

Evidence for a significant weekly cycle in Death Valley precipitation over the past forty years (1971–2010) was demonstrated using analysis of variance (ANOVA), chi-squared analysis, and difference of means (student's t-test) testing. Since 1971, 23.5% more precipitation occurred during the Wednesday to Friday (weekday) period than the Saturday to Monday (weekend) period. The absolute difference in total precipitation between the weekday and weekend group was 215 mm for the entire period. This difference represents almost four years of annual precipitation in Death Valley. While there were only 2.5% more precipitation days in the weekday group, mean precipitation intensity during the weekday period was 20.4% higher than the weekend group (2.80 mm d⁻¹ versus 2.33 mm d⁻¹). Results stratified by warm season (April–September) and cold season (October–March) showed a similar pattern, but the positive weekday anomaly was considerably stronger in the warm season, with 61.7% more weekday than weekend precipitation observed over the forty-year study period. The observed day-of-week variability in Death Valley precipitation coincided with statistically significant weekly cycles in PM₁₀ concentrations, which supports the view that anthropogenic emissions influence precipitation even in extremely arid regions such as Death Valley.

Introduction

Overview of Weekend vs. Weekday Comparisons

OVER THE PAST FEW DECADES, there has been an impressive array of research on the impacts of anthropogenic activities on local- to global-scale weather and climate. Beyond the widely discussed role of atmospheric carbon dioxide on the global climate system, many studies have elucidated anthropogenic effects on urban climate, such as the urban heat island; climate change owed to land-cover change, such as that occurring in the Amazon Basin; and weekly cycles of atmospheric pollution, which have been reported in almost every geographic region on earth. The allure of studies focused on weekly cycles may stem from the fact that the human week is

a distinct temporal signal that has no known natural analogue in environmental research (Cerveny and Balling 1998). Accordingly, many believe meteorological variables that exhibit day-of-week (DOW) variability offer irrefutable evidence of human influence on climate given the uniqueness of this cycle in nature.

A weekly cycle in temperature has been demonstrated in countless studies spanning multiple decades in both urban and rural locations throughout diverse geographic regions and across local to global scales (e.g., Mitchell 1961, Lawrence 1971, Gordon 1994, Simmonds and Keay 1997, Forster et al. 2003, and You et al. 2009). However, evidence for a weekly cycle in precipitation is more difficult to assess, given the spatial discontinuities and high variance of precipitation over even small geographic distances. Ashworth (1929) demonstrated that Sundays generally had less rainfall in the factory town of Rochdale, United Kingdom, a result that likely marked the beginning of research on DOW variability in precipitation. Later, research on anthropogenic precipitation modification was greatly stimulated by the controversial “La Porte Anomaly,” a finding by Changnon (1968) of significantly higher precipitation amounts downwind of Chicago in the small town of La Porte, Indiana. In part inspired by the scientific discussion generated by the La Porte research, a large urban climate field campaign called METROMEX examined St. Louis, Missouri, in great detail and produced many significant articles on urban climatology, including several on anthropogenic influences on precipitation (Huff and Changnon 1972, Huff and Vogel 1978). Since METROMEX, DOW precipitation variability has been documented in a variety of cities across the globe (e.g., Cehak 1982, Simmonds and Kaval 1986, Bäumer and Vogel 2007, Svoma and Balling 2009, and Marani 2010), lending support to the existence of a weekly cycle. However, debates about the veracity of DOW precipitation variability increased following a set of contradictory studies in North America.

Using satellite-derived rainfall estimates, Cerveny and Balling (1998) found that Saturday precipitation was 22% higher than Monday precipitation off the coast of North America. They showed that the weekly cycle in precipitation is mirrored by the cycles of CO and O₃, suggesting that pollution may be responsible for the observed DOW variability. Their study is unique in that it demonstrates the potential of a regional- to global-scale DOW cycle in precipitation. On the other hand, DeLisi, Cope, and Franklin (2001) did not observe any statistically significant weekly cycle for seven cities

along or near the east coast of the United States from the northern mid-Atlantic region to northern New England. Bell et al. (2008) also found a weekend positive anomaly in eastern North America, bolstering the conclusions reached by Cervený and Balling (1998). However, in a study of 219 weather stations in the United States, Schultz et al. (2007) concluded that precipitation amount and frequency do not exhibit any statistically significant DOW dependence and questioned the statistical cogency of previous research on the topic. Marani (2010) suggested that the divergence of research on DOW precipitation variability is a product of varying methodologies and statistical techniques, among other factors. Nevertheless, Marani (2010) reported statistically significant DOW variability in precipitation amount, though not total precipitation days, at three locations Marghera, Italy; Philadelphia, Pennsylvania; and Portland, Maine for the period 1990–2006, with no clear DOW signal evident before 1989.

While DOW precipitation variability and potential anthropogenic influence on precipitation have been examined in many regions with contradictory results, studies performed in arid regions are comparatively rare. Some notable exceptions include the work of Diem and Brown (2003), which observed that precipitation downwind of Phoenix, Arizona, might be related to anthropogenic activity. Shepherd (2006) continued research in this area and found that suburb locations downwind of Phoenix experienced a 12 to 14% increase in precipitation in the period 1950–2003, compared with the pre-urban period of 1895–1949. Results from Shepherd (2006) regarding an anthropogenic influence on precipitation downwind of Riyadh, Saudi Arabia, were less conclusive. However, neither study specifically sought to identify evidence for a weekly cycle in precipitation. On the other hand, Shutters and Balling (2006) explicitly identified weekly periodicities in numerous meteorological and air-pollution variables in Phoenix, including minimum temperature, wind speeds, haze events, and PM_{10} concentration, but the precipitation findings were somewhat inconclusive, perhaps due to the relatively short study period of less than nine years. Nevertheless, Shutters and Balling (2006) observed a very high correlation of $r = 0.92$ between precipitation and sulfur aerosols in Phoenix, which supports the existence of an anthropogenic impact on Phoenix precipitation. More recently, Svoma and Balling (2009) identified an inverse relationship between $PM_{2.5}$ and DOW precipitation amount in Phoenix, with the highest (lowest) precipitation totals during winter observed on Monday (Thursday). They asserted that human

activity, specifically the generation of $PM_{2.5}$, is “having a statistically significant recognizable impact on local-area precipitation patterns” (Svoma and Balling 2009, 320).

Study Purpose

In this study, DOW variability in Death Valley precipitation is examined for the period 1971–2010. Death Valley is one of the driest places in North America, with just 55–60 mm of average annual precipitation, ranging from a maximum annual total of 121 mm recorded in 2005 to no measurable precipitation in 1929 and 1953. Roof and Callagan (2003) noted that precipitation increased in Death Valley by 35% since the 1960s, with less summer rainfall but an increase in total precipitation days. The motivation for this study stems from Death Valley’s location downwind of numerous major cities (Figure 1), each with distinct DOW variability in atmospheric pollution (e.g., Marr and Harley 2002, and Blanchard and Tanenbaum 2003) that could modulate precipitation patterns in this arid

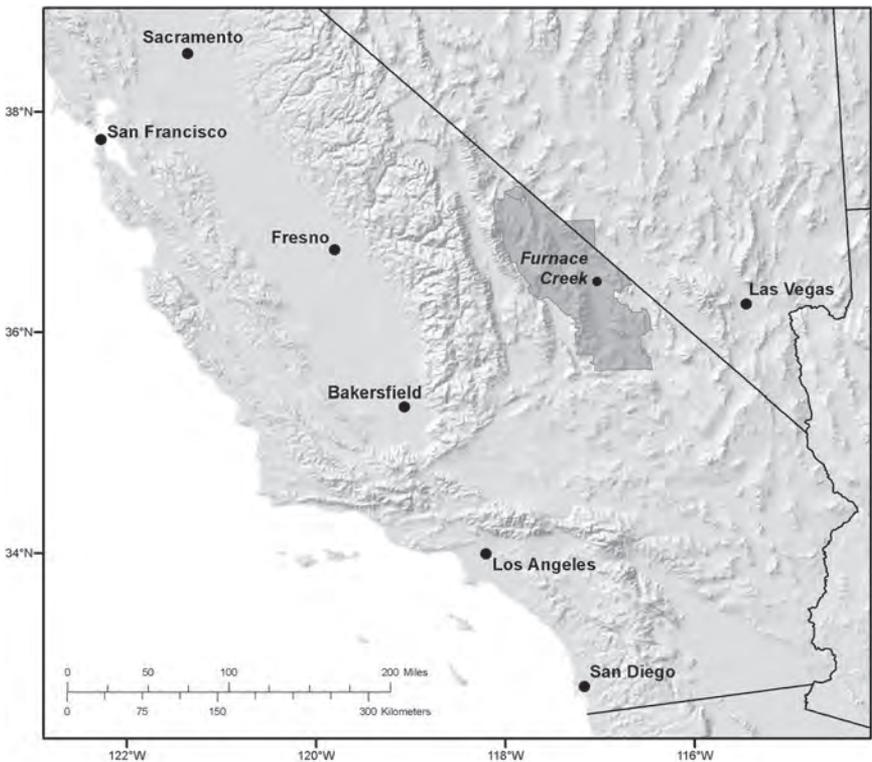


Figure 1.—Map of southern California, with Death Valley indicated by the dark shading.

region. In general, urban ozone levels tend to peak on weekends (e.g., Atkinson-Palombo, Miller, and Balling 2006; and Murphy et al. 2007), but other atmospheric pollutants typically experience mid-week peaks, including the main pollutant of interest here, PM_{10} (aerosol particulate matter with a diameter $<10 \mu m$). Because Death Valley is located downwind of many sources of PM_{10} , a pollutant closely linked to anthropogenic activities due to its composition of smoke and dust from industrial sources as well as automobile emissions (Choi et al. 2008), it is hypothesized that Death Valley should likewise experience a statistically significant DOW PM_{10} variability. While the research literature suggests that aerosols may act to either suppress or enhance precipitation (e.g., Rosenfeld 2006, Bell et al. 2008, and Svoma and Balling 2009) depending on a host of factors, including time of day and year, prevailing synoptic conditions, and so forth, it seems that aerosols may suppress precipitation from shallow clouds, but enhance convective precipitation, though even this generalization is subject to numerous caveats. Nevertheless, the working hypothesis, informed by results from Nicholson (1965), Simmonds and Kaval (1986), Simmonds and Keay (1997), Cerveny and Balling (1998), and Miller (2007), among others, is that precipitation amount and intensity will be higher on days with higher levels of atmospheric pollution. Accordingly, in this study, DOW variability in Death Valley PM_{10} and precipitation will be analyzed to test the hypothesis of enhanced rainfall totals due to upwind anthropogenic emissions.

Data and Methods

Data

Daily precipitation data for the official weather station in Death Valley National Park (DVNP) for the period 1971–2010 were obtained from the Utah Climate Center's online (<http://climate.usu.edu>) data repository. In the forty-year study period, missing data were negligible, with only sixty-seven days unavailable, the majority from two missing months, December 1984 and December 1994. An unfortunate but common problem for climate research in the remotest regions of the western United States is the paucity of meteorological records. In this case, there is not another long-term weather station near the Furnace Creek location. As such, this study will present results from just one weather station, which is an obvious but unavoidable limitation of long-term studies of Death Valley climate (Roof and Callagan 2003).

While the DVNP record extends back to 1911, there were several factors that made the use of the 1971–2010 period preferable. Perhaps most importantly, the daily data in DVNP before 1948 have been shown to contain many potential errors (e.g., Roof and Callagan 2003). Moreover, in 1961, the DVNP weather station relocated approximately 8 km south from the Cow Creek Park Service Headquarters location to its current location at Furnace Creek. Given the potential discontinuity or homogeneity issue this could pose (e.g., Alexandersson 1986), the decision was made to only consider data from the current location. Though 1971–2010 is the focus of this current study, the 1961–2010 period was also examined to see if the results differed. Regardless of the time period, the data showed the same basic weekly cycle in precipitation. Accordingly, the shorter record was selected due to its correspondence with the period of greatest urban expansion in California and implementation of the Clean Air Act of 1970, which has generally resulted in improved air quality throughout the state, though improvements vary by geographic location and specific pollutants (Carle 2006). With a precipitation dataset that corresponds entirely to the period of stricter air-pollution regulations, it is possible to examine what effect, if any, improving air quality has had on the existence of weekly cycles of precipitation in DVNP.

Daily PM_{10} data from the Interagency Monitoring of Protected Visual Environments (IMPROVE) network for the period 2000–2010 were used to examine possible weekly cycles in atmospheric pollution in DVNP. The IMPROVE station for Death Valley is also located in Furnace Creek, providing a close match with the official precipitation gauge for the park. While PM_{10} data in Death Valley were available from 1993–2010, the decision to use only data after summer 2000 was made because this date marks the transition when the Wednesday–Saturday observation schedule switched to a once-every-third-day schedule that allows for monitoring of each weekday in the eleven-year dataset between 2000 and 2010. While the precipitation and PM_{10} data do not completely overlap, the eleven-year record in the pollution data should be sufficient to detect weekly cycles. Moreover, the data show that weekly cycles in PM_{10} were fairly consistent from year to year, suggesting that the baseline established for the period 2000–2010 can be reasonably assumed to parallel years unavailable in the PM_{10} record. While there is conflicting evidence as to whether PM_{10} enhances or suppresses precipitation and on what scale, it is an appropriate indicator of human influence within the lower troposphere that can plausibly

act as a mechanism to increase cloud condensation nuclei (CCN) into the atmosphere, thereby potentially influencing precipitation amount, frequency, and intensity.

Methods

Three main precipitation variables were examined, precipitation amount (mm), precipitation days, and precipitation intensity (mm/event). In testing the null hypothesis of no significant difference between variables by DOW, analysis of variance (ANOVA), chi-squared analysis, and difference of means (student's t-test) were each used, where appropriate. For the majority of the analyses, the days were grouped into weekday (Wednesday–Friday) and weekend (Saturday–Monday) categories and then subjected to the student's t-test to examine the significance of the weekday-weekend differences. Forster and Solomon (2003) suggested this weekday-weekend grouping to ensure a near-equal amount of days and argued specifically for Monday in the weekend category due to its timing right after the weekend reduction in urban activity. Given the change from frontal-induced precipitation in winter to a more convective pattern in summer, the results were also grouped by season, with April–September labeled “warm season,” while October–March were considered “cold season.” Following the recommendation of Gordon (1994), a one-tailed test for the meteorological and pollution variables is justified, given the *a priori* understanding that anthropogenic activity is higher during the week; therefore, there is strong theoretical reasoning to suspect that precipitation would also be highest during this time. In all cases, the significance level is 10%, unless noted otherwise.

Results

The DOW variability in total precipitation amount for the entire study period of 1971–2010 in DVNP is shown in Figure 2. The data clearly show a distinct weekly cycle with mid-week precipitation amounts significantly higher than those observed during the weekend period. Combined Wednesday and Thursday precipitation accounted for 771 mm (31.8%) of the forty-year total, while Saturday and Sunday combined for just 599 mm (24.7%); the difference between the two groupings was statistically significant ($p = 0.076$). The difference between the weekday (Wednesday–Friday) and weekend (Saturday–Monday) grouping was also statistically significant ($p = 0.084$) with total weekday precipitation 216 mm (23.5%) higher than that observed in the weekend (Saturday–Monday) grouping.

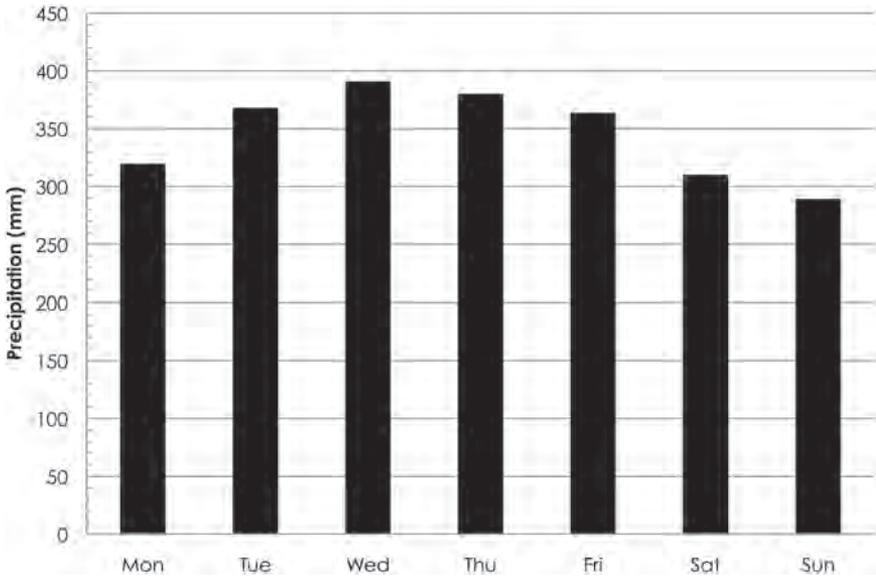


Figure 2.—Total precipitation in Death Valley (Furnace Creek) by day-of-week, 1971–2010.

To demonstrate that the same general pattern of wetter (drier) weekdays (weekends) is not simply an artifact of the time period investigated, the forty-year record was also split into two twenty-year periods, 1971–1990 and 1991–2010. As indicated in Table 1, the 1971–1990 period featured a weekday anomaly of 36.6% in total precipitation amount, while the later period 1991–2010 had a 10.7% weekday anomaly. Accordingly, there is strong support for a long-term preference for higher precipitation amounts in Death Valley during the mid-week. This is also evidenced in Figure 3, which shows the temporal evolution of weekday and weekend cumulative (since 1971) precipitation. Beginning in 1978, cumulative Wednesday to Friday precipitation exceeded Saturday to Monday precipitation through the end of the study period. Figure 3 also demonstrates what was evident in Table 1, specifically that the weekday positive precipitation anomaly has decreased slightly in the period 2003–2010. Nevertheless, Figures 2 and 3, and Table 1, each indicate that weekday precipitation amounts significantly exceeded weekend values throughout the study period.

Table 1. Death Valley (Furnace Creek) precipitation statistics for weekdays (Wednesday–Friday) and weekends (Saturday–Monday) during 1971–1990 and 1991–2010.

	1971– 1990		
	Precipitation (mm)	Precipitation Days	Intensity (mm/event)
Wed–Fri	618	216	2.86
Sat–Mon	452	207	2.19
Difference	165	9	0.67
%	36.6%	4.3%	30.9%

	1991– 2010		
	Precipitation (mm)	Precipitation Days	Intensity (mm/event)
Wed–Fri	517	189	2.74
Sat–Mon	467	188	2.48
Difference	50	1	0.25
%	10.7%	0.5%	10.2%

Further evidence for the existence of a weekly cycle in Death Valley precipitation is revealed in the analysis of cold-season (October–March) and warm-season (April–September) precipitation shown in Table 2. The positive weekday anomaly is far more pronounced in the warm-season with 61.7% ($p < 0.05$) more weekday than weekend precipitation observed over the forty-year study period. While weekday cold-season precipitation totaled 6.8% more than weekend precipitation, the difference was not statistically significant. However, it is worth noting that during the cold-season, Wednesday precipitation amounted to 16.8% of the total, while Saturday precipitation was just 11.9%, a difference that was statistically significant.

The frequency of observed precipitation days did not exhibit a strong DOW dependence, with a chi-squared analysis failing to reveal significant differences in the number of days with precipitation by DOW. The total rain days in the weekend and weekday groupings was reasonably similar in both time periods investigated (Table 1) and in both halves of the year (Table 2). In addition, there was no clear indication of significant differences in the number

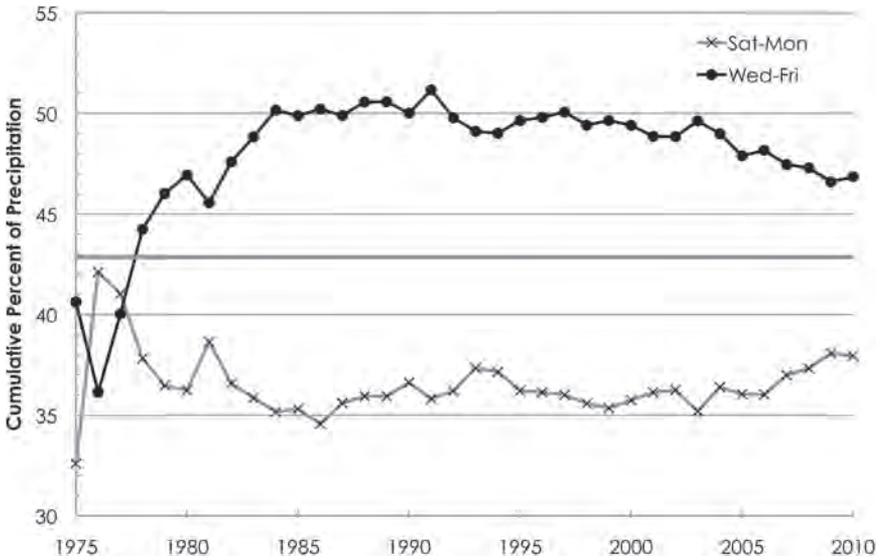


Figure 3.—Cumulative precipitation percent since 1971 for weekdays (Wednesday–Friday) and weekends (Saturday–Monday) in Death Valley (Furnace Creek). The solid grey line at 42.85% is displayed to show departures from a homogenous day-of-week precipitation distribution.

of days above various thresholds (1 mm, 5 mm, 10 mm, 25 mm, etc.). Nevertheless, it is interesting that Sunday had the fewest precipitation days, with 123 (12.9% of the total), while Tuesday had the most precipitation days, with 156 (16.3% of the total). Overall, the weekday grouping contained only ten more precipitation days than the weekend grouping in the entire forty-year study, an insignificant 2.5% difference. Given that precipitation frequency was essentially statistically homogenous throughout the week, but precipitation amounts demonstrated significant DOW variability, it is not surprising that precipitation intensity showed pronounced DOW differences.

As illustrated in Figure 4, precipitation intensity for the entire study period exhibited a marked mid-week peak, with a weekday grouping average of 2.80 mm/rain event compared to 2.33 mm/rain event, a 20.4% intensity increase during Wednesday to Friday compared to the Saturday to Monday period. Among individual days, Wednesday experienced the highest precipitation intensity at 2.92 mm/event, which was 27% higher than Saturday precipitation events. Results stratified by the two time periods demonstrate that the weekday positive precipitation anomaly persisted throughout the study period, but the phenomenon was considerably stronger in the 1971–1990

period. Overall, the data show that weekdays experienced 30.9% and 10.2% higher precipitation intensities than weekends in 1971–1990 and 1991–2010, respectively. A possible explanation for the observed positive weekday anomalies is the DOW variability in DVNP PM₁₀.

Table 2. Death Valley (Furnace Creek) precipitation statistics for weekdays (Wednesday–Friday) and weekends (Saturday–Monday) during the “cold season” (October–March) and “warm season” (April–September).

Cold Season (October–March)			
	Precipitation (mm)	Precipitation Days	Intensity (mm/event)
Wed–Fri	759	248	3.06
Sat–Mon	711	264	2.69
Difference	49	-16	0.37
%	6.8%	-6.1%	13.7%
Warm Season (April–September)			
	Precipitation (mm)	Precipitation Days	Intensity (mm/event)
Wed–Fri	297	125	2.38
Sat–Mon	184	105	1.75
Difference	113	20	0.63
%	61.7%	19.0%	35.8%

Despite being located between 200–350 km from the urban areas of California’s Central Valley, approximately 300 km from the Los Angeles metropolitan region, and over 450 km from the San Francisco Bay area, a distinct weekly cycle in PM₁₀ concentration that is extremely unlikely to be a result of local sources was found in Death Valley as illustrated in Figure 5. For the entire eleven-year record, weekday (Wednesday–Friday) PM₁₀ levels were 33.7% higher ($p < 0.05$) than those observed on weekends. Superimposed on Figure 5 are the forty-year precipitation intensity values from Figure 4 to demonstrate the strong correlation between average precipitation intensity and PM₁₀ levels. It is interesting to note that the three highest PM₁₀ days, also correspond to the three highest precipitation intensity days. Given the lack of significant DOW variation

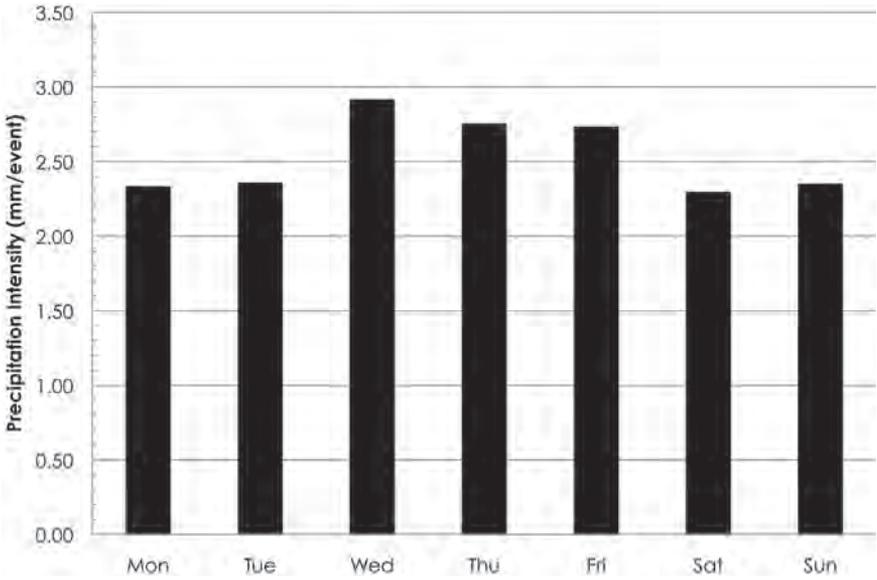


Figure 4.—Precipitation intensity (mm/rain event) in Death Valley (Furnace Creek) by day-of-week for 1971–2010.

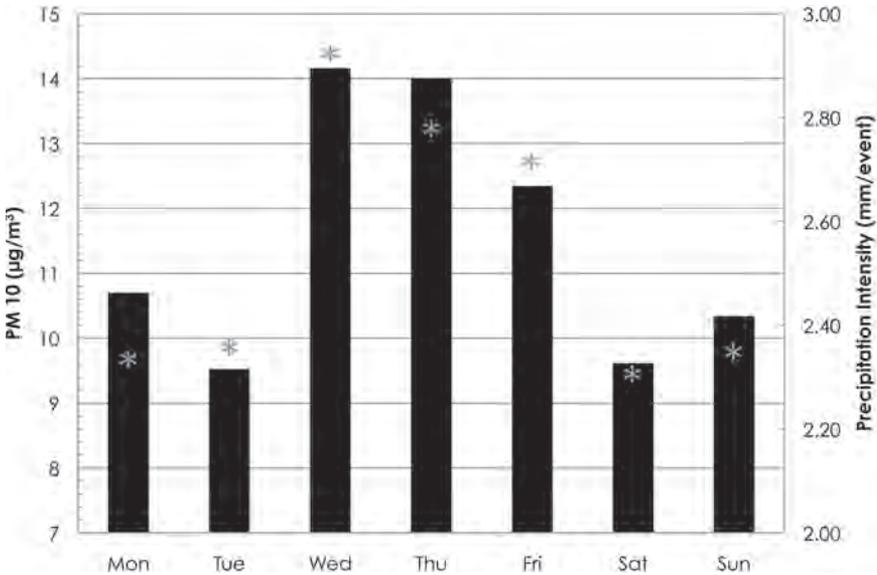


Figure 5.—Average PM₁₀ concentration at Death Valley (Furnace Creek) by day-of-week for 2000–2010, with the precipitation intensities from Figure 4 indicated by the asterisks.

in precipitation days, this suggests that atmospheric pollution in Death Valley acts to enhance precipitation, not necessarily cause it. Notably, overall PM_{10} concentrations in DVNP were over two times as high in the warm season compared to the cold season; between April and September, average PM_{10} concentrations were $15.99 \mu\text{g}/\text{m}^3$, compared to $7.60 \mu\text{g}/\text{m}^3$ in the colder half of the year. This result is possibly related to the observation that DOW precipitation variability was much stronger in the warm season. Nevertheless, in both halves of the year, PM_{10} levels exhibited statistically significant DOW variation that mirrored DOW precipitation cycles. In the cold half of the year, October–March, the weekday PM_{10} averaged $13.50 \mu\text{g}/\text{m}^3$, compared to $10.09 \mu\text{g}/\text{m}^3$ among the weekend grouping, a statistically significant ($p < 0.05$) difference of 33.7%. During the warm half of the year, weekday PM_{10} was $18.74 \mu\text{g}/\text{m}^3$ versus $13.51 \mu\text{g}/\text{m}^3$ for weekends, a 38.7% difference ($p < 0.05$). The DOW PM_{10} variation by season reveals that weekdays during the cold season contain the same PM_{10} levels as weekends in the warm season. Overall, both warm and cold season PM_{10} levels exhibit strong DOW dependence, with higher pollution levels during the mid-week than the weekend, which lends credibility to the contention that elevated precipitation amounts and intensities during the mid-week are related to anthropogenic activities far upwind of Death Valley.

Discussion

The working hypothesis in this study was that atmospheric pollution generated upwind of Death Valley in cities such as Los Angeles, Bakersfield, Fresno, and the San Francisco Bay area would lead to a weekly cycle in PM_{10} in DVNP, which would in turn help produce a distinct weekly cycle in precipitation. With regard to a weekly cycle in PM_{10} , the data show that weekday levels of PM_{10} are 30–40% higher than those observed on weekends. The weekly cycles in PM_{10} even for a remote region like DVNP are not uncommon, but the magnitude of the weekly range is considerably higher than non-arid values reported elsewhere. For instance, Bell et al. (2008) noted that PM_{10} weekly cycle amplitudes were $\pm 10\%$, which is consistent with results from Barmet et al. (2009), who found a 10–15% difference between DOW maximum and minimum PM_{10} concentrations. Closer to Death Valley, Miller (2007) found a DOW cycle in Las Vegas, Nevada PM_{10} with more than double the PM_{10} concentration on weekdays compared to weekends at two urban stations. Overall, the results presented here are reasonably consistent with previous research on DOW variability in PM_{10} .

With respect to DOW precipitation variability, Svoma and Balling (2009) observed a Monday maximum in winter Phoenix precipitation that was approximately 30% greater than the Saturday minimum. Simmonds and Keay (1997) found weekday-weekend differences in Melbourne, Australia, generally less than 15%. Similarly, Cervený and Balling (1998) concluded Saturday precipitation was 22% higher than Monday precipitation along the east coast of North America. In general, where DOW statistically significant differences in precipitation amount or intensity are reported, they are commonly in the 10–30% range. As such, the 23.5% weekday positive anomaly found here for Death Valley is quite consistent with previous research on DOW precipitation variability.

The finding that DOWV was greatest during the summer months is also not surprising, given the difference in atmospheric circulation during the cold and warm season. During winter, precipitation tends to occur in association with low-pressure systems and frontal lifting, leading to a much more active atmosphere. Moreover, fronts create a wind shift when they pass through an area and can significantly alter the local pollution field. Because each storm carves out a unique path in the atmosphere, the dispersion of pollution in association with low-pressure systems would tend to minimize enhancement in one particular area. As summarized by Oke (1982) and Arnfield (2003), anthropogenic effects on climate are often much stronger during the warm season. Though not a DOW study, Diem and Brown (2003) found evidence for precipitation enhancement downwind of Phoenix, Arizona, during the summer monsoon season. Therefore, the more robust results found in the warm season are consistent with basic meteorological principles and previous research. Furthermore, that DOW variability was more pronounced in the 1971–1990 period is likely related to improvements in air quality throughout California following passage of the Clean Air Act of 1970. However, the relatively short PM_{10} record spanning from 2000 to 2010 does not allow for a more definitive conclusion.

Clearly, the above analysis indicates that there is a solid statistical relationship between DOW cycles in PM_{10} and precipitation in DVNP. Previous research suggests it is highly likely that pollutants play an important role in producing DOW variability or urban enhancement in meteorological parameters (e.g., Lowry 1977; Vogel and Huff 1978; Khemani, Momin, and Naik 1987; Simmonds and Keay 1997; Cervený and Balling 1998; Diem and Brown 2003; Rosenfield 2006; Shepherd 2006; Svoma and Balling 2009; and Marani 2010). While

Marani (2010) correctly notes that research on DOW precipitation variability has been unequivocal, his study suggests that differences in methodology, data sets, study locations, and time periods may account for the divergence of results. In reporting significant DOW precipitation variability in three cities, Marani (2010) reiterated the general conclusions reached by Rosenfeld (2006), specifically that aerosols are likely not capable of producing consistently higher precipitation frequencies, but they can promote high rainfall intensities. Indeed, that is the main conclusion reached in this study; rainfall intensities were consistently higher on days with higher PM_{10} levels, but precipitation frequencies were not.

Conclusions

Using forty years of daily precipitation data from Death Valley National Park, significant DOW variability in precipitation amount and intensity was observed. Notably, more robust results were found in the warm season and in the earlier period (1971–1990) of the study. While it is always important to note that correlation does not imply causation and equally important to consider the limitations of a study based on a single weather station, the DOW variability found in the forty-year dataset is nevertheless impressive. The weekly cycle in precipitation presented here is consistent with previous research and adds to a growing body of literature on DOW variability in local to regional climate. The results from this study suggest that human activity hundreds of kilometers upwind of Death Valley exerts a statistically significant impact on local precipitation, with PM_{10} appearing to enhance precipitation intensities. However, whether particulate matter generally enhances or suppresses precipitation, and under what synoptic conditions such effects may occur, is far from a settled question. Accordingly, a broader study focusing on the entire Mojave Desert region to examine the possibility of a region-wide DOW precipitation signal is recommended.

References

- Alexanderson, H. 1986. A homogeneity test applied to precipitation data. *Journal of Climatology* 6:661–675.
- Arnfield, J. A. 2003. Two decades of urban climate research: A review of turbulence, exchanges of energy and water, and the urban heat island. *International Journal of Climatology* 23:1–26.
- Ashworth, J. R. 1929. The influence of smoke and hot gases from factory chimneys on rainfall. *Quarterly Journal of the Royal Meteorological Society* 55:341–350.

- Atkinson-Palombo, C., J. A. Miller, and R. C. Balling. 2006. Quantifying the ozone “weekend effect” at various locations in Phoenix, Arizona. *Atmospheric Environment* 40:7644–7658.
- Barmet, P., T. Kuster, A. Muhlbauer, and U. Lohmann. 2009. Weekly cycle in particulate matter versus weekly cycle in precipitation over Switzerland. *Journal of Geophysical Research* 114: doi:10.1029.2008JD011192.
- Bäumer, D., and B. Vogel. 2007. An unexpected pattern of distinct weekly periodicities in climatological variables in Germany. *Geophysical Research Letters* 34: doi:10.1029/2006GL028559.
- Bell, T. L., D. Rosenfeld, K.-M. Kim, J.-M. Yoo, M.-I. Lee, and M. Hahnenberger. 2008. Midweek increase in U.S. summer rain and storm heights suggests air pollution invigorates rainstorms. *Journal of Geophysical Research* 113: doi:10.1029/2007JD008623.
- Blanchard, C. L., and S. J. Tanenbaum. 2003. Differences between weekday and weekend air pollutant levels in southern California. *Journal of the Air & Waste Management Association* 53:816–828.
- Carle, D. 2006. *Introduction to Air in California. (California Natural History Guides)*. Berkeley: University of California Press.
- Cehak, K. 1982. Note on the dependence of precipitation on the day of the week in a medium industrialized city. *Archives for Meteorology, Geophysics, and Bioclimatology* 30:247–251.
- Cerveny, R. S., and R. C. Balling. 1998. Weekly cycles of air pollutants, precipitation and tropical cyclones in the coastal NW Atlantic region. *Nature* 394:561–563.
- Changnon, S. A. 1968. The LaPorte weather anomaly—fact or fiction? *Bulletin of the American Meteorological Society* 49:4–11.
- DeLisi, M. P., A. M. Cope, and J. K. Franklin. 2001. Weekly precipitation cycles along the northeast corridor. *Weather and Forecasting* 16:343–353.
- Diem, J. E., and D. P. Brown. 2003. Anthropogenic impacts on summer precipitation in Central Arizona, U.S.A. *The Professional Geographer* 55:343–355.
- Forster, P. M. D., and S. Solomon. 2003. Observations of a “weekend effect” in diurnal temperature range. *Proceedings of the National Academy of Sciences* 100:11225–11230.
- Gordon, A. H. 1994. Weekdays warmer than weekends? *Nature* 367:325–326.
- Huff, F. A., and S. A. Changnon. 1972. Climatological assessment of urban effects on precipitation at St. Louis. *Journal of Applied Meteorology* 11:823–842.

- Huff, F. A., and J. L. Vogel. 1978. Urban, Topographic and Diurnal Effects on Rainfall in the St. Louis Region. *Journal of Applied Meteorology* 17:565–577.
- Khemani, L. T., G. A. Momin, and M. S. Naik. 1987. Influence of atmospheric pollutants on cloud microphysics and rainfall. *Boundary Layer Meteorology* 41:367–380.
- Lawrence, E. N. 1971. Urban climate and day of the week. *Atmospheric Environment* 5:935–948.
- Lowry, W. P. 1977. Empirical estimation of urban effects on climate: a problem analysis. *Journal of Applied Meteorology* 16:129–135.
- Marani, M. 2010. The detection of weekly preferential occurrences with an application to rainfall. *Journal of Climate* 23:2379–2387.
- Marr, L. C., and R. A. Harley. 2002. Spectral analysis of weekday–weekend differences in ambient ozone, nitrogen oxide, and non-methane hydrocarbon time series in California. *Atmospheric Environment* 36:2327–2335.
- Miller, J. A. 2007. Local and regional climate change in the Mojave Desert, USA. Ph.D. dissertation, Department of Geography, Arizona State University.
- Mitchell, J. M. 1961. The temperature of cities. *Weatherwise* 14:224–229.
- Murphy, J. G., D. A. Day, P. A. Cleary, P. J. Wooldridge, D. B. Millet, A. H. Goldstein, and R. C. Cohen. 2007. The weekend effect within and downwind of Sacramento ? Part 1: Observations of ozone, nitrogen oxides, and VOC reactivity. *Atmospheric Chemistry and Physics* 7:5327–5339.
- Nicholson, G. 1965. Wet Thursdays again. *Weather* 20:322–323.
- Oke, T. R. 1982. The energetic basis of the urban heat island. *Quarterly Journal of the Royal Meteorological Society* 108:1–24.
- Roof, S., and C. Callagan. 2003. The climate of Death Valley, California. *Bulletin of the American Meteorological Society* 84:1725–1739.
- Rosenfeld, D. 2006. Aerosol-cloud interactions control of Earth radiation and latent heat release budgets. *Space Science Reviews* 125:149–157.
- Schultz, D. M., S. Mikkonen, A. Laaksonen, and M. B. Richman. 2007. Weekly precipitation cycles? Lack of evidence from United States surface stations. *Geophysical Research Letters* 34: doi:10.1029/2007GL031889.
- Shepherd, J. M. 2006. Evidence of urban-induced precipitation variability in arid climate regimes. *Journal of Arid Environments* 67:607–628.

- Shutters, S. T., and R. C. Balling. 2006. Weekly periodicity of environmental variables in Phoenix, Arizona. *Atmospheric Environment* 40:304–310.
- Simmonds, I., and J. Kaval. 1986. Day-of-the-week variation of rainfall and maximum temperature in Melbourne, Australia. *Archives for Meteorology, Geophysics, and Bioclimatology* 31:1589–1603.
- Simmonds, I., and K. Keay. 1997. Weekly cycle of meteorological variation in Melbourne and the role of pollution and anthropogenic heat release. *Atmospheric Environment* 31:1589–1603.
- Svoma, B. M., and R. C. Balling. 2009. An anthropogenic signal in Phoenix, Arizona winter precipitation. *Theoretical and Applied Climatology* 98:315–321.
- You, Q., S. Kang, W.-A. Fiügel, A. Sanchez-Lorenzo, Y. Yan, Y. Xu, and J. Huang. 2009. Does a weekend effect in diurnal temperature range exist in the eastern and central Tibetan Plateau? *Environmental Research Letters* 4:1–7.

Cannabis City: Medical Marijuana Landscapes in Los Angeles

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Abstract

In 2004, nearly ten years after California voters approved Proposition 215 legalizing medical marijuana, local statutory environment relaxed to a point that triggered an explosion of medical marijuana dispensaries (MMDs) in several California cities. The staggering growth of the industry—despite continuing reservations of the medical community, an ongoing ban by the federal government, and legal restrictions on profit-taking by MMDs—called into question the medical credentials of this industry. This study investigates the MMD industry using both classic landscape and computer-intensive content analyses of the built environment of MMDs. A typology of MMDs is constructed that, upon inspection, suggest that though many MMDs appear to function as vendors of natural, therapeutic remedies, a significant minority of MMDs market marijuana primarily as a recreational, hallucinogenic drug. The landscapes built by this minority threaten to undermine the position of medical marijuana proponents.

Introduction

PEOPLE HAVE USED CANNABIS for a variety of industrial, recreational, and therapeutic purposes for thousands of years. Early Americans, including George Washington, grew fields of cannabis, though it was likely the more industrial variant of the plant known as hemp. Over many generations, the medicinal and industrial reputations associated with the plant dimmed in the public consciousness as the intoxicating properties of certain varieties of the plant became better known. An evolving public panic about the effects of recreational use of a variant of cannabis known as marijuana prompted California to ban it in 1913. The federal government followed suit, but it took nearly four decades before the construction of a host of legal sanctions against the cultivation, distribution, and consumption of cannabis was complete. By the late 1960s, public opinion about the drug had already begun to change, perhaps in response to the widespread use of marijuana as a recreational drug by baby boomers. As that generation aged, and the long-term effects of marijuana use

proved not only reasonably safe, at least compared to the hysterical propaganda used by the government, public opinion began to soften.

In politically progressive regions, and in a few libertarian regions around the country, efforts at legalization emerged in the early 1990s. Predictably, Californians were among the first to seriously challenge the status quo. After several failed attempts at legalization through the California legislature, a group of activists managed to get Proposition 215, a law to decriminalize the sale and possession of marijuana for medical purposes, on the ballot. The initiative passed a vote of the California public in 1996, but was overturned several years later by the U.S. Supreme Court, which ruled that federal restrictions against the drug preempted state law. A second ballot initiative (Proposition 19) that aimed to fully decriminalize marijuana in California failed to pass in 2010, but efforts are underway to reintroduce similar ballot measures in future elections, driven partly by a public that senses that the costs of enforcement outweigh the benefits.

The legality of marijuana remains unclear in California. The California legislature, simultaneously ignoring federal authorities and deferring to local ones, fashioned a legal framework for the production, distribution, and consumption of medical marijuana that included provisions allowing local, municipal governments to regulate the retail sale of medical marijuana. As it stands, medical marijuana is easy to access in some California cities, but in others it remains generally illegal. If you are in a city where the sale of marijuana has been authorized by local government, you may still face criminal charges depending on the mood of the federal government. Since the passage of Proposition 215, it has been the case that when the federal government decides to enforce *its* laws in California, marijuana, even for medical use, becomes *functionally* illegal. When the federal government decides to focus its enforcement energies elsewhere, medical marijuana becomes *functionally* legal in most areas. In late 2011, after several shifts in the vigor of federal enforcement practices, the Obama administration, which had initially declined to enforce federal law, announced they would be resuming a more aggressive stance against the sale and distribution of marijuana in California.

Retailers of medical marijuana in the City of Los Angeles have had to navigate a patchwork of federal, state, and local laws and a schizophrenic attitude toward enforcement from all levels of gov-

ernment. After a period of staggering expansion beginning around 2004, perhaps as many as a thousand medical marijuana dispensaries (MMDs) were operating citywide, though many observers suggest the number was closer to five hundred (Hoeffel 2010a). The rapid expansion of MMDs caught the attention of the public and late-night TV comics alike. The Tonight Show with Jay Leno spoofed the situation in Los Angeles by producing a short, mock news clip showing Los Angelenos leaving a big-box retailer called “PotCo” (painted to look like CostCo) with shopping carts filled with bails of marijuana. City officials, maintaining they had issued only between 180 and 190 licenses, seemed for several years unaware of the phenomenal growth of unlicensed pot shops. The Los Angeles City Council finally responded to the unregulated growth of MMDs by passing a moratorium in 2007. After several years, the same city council finally crafted a more comprehensive set of regulations that restricted further expansion of the industry through strict zoning and permitting provisions. In June 2010, the City of Los Angeles began cracking down on dispensaries without a proper licensing permit. The Los Angeles Times reported that 439 dispensaries had been notified that they must close. According to reports, only the 187 (or 182) MMDs with licenses obtained before the moratorium were allowed to operate legally (Hoeffel 2010a). A year later, that crackdown appears to have been accomplished with mixed success. It would appear many of the MMDs ordered to close, remain open. Indeed some MMDs that were slated for closure counted among those with legitimate permits. Some that were temporarily shuttered appear to have reopened.

Landscape Studies

Medical marijuana invites a variety of studies, and more than a few have been done from a spatial perspective (Jansen 1990). Many of the better-known studies have analyzed the cultivation and distribution of the crop (see, for example, Raphael 1985). Other studies have looked at the retail end of the pipeline. For example, Vilalta examined drug-bust patterns in Mexico City (2010); Bouchard and Tremblay (2005) looked at drug arrests as well. Most of those studies were conducted during a time when selling marijuana was strictly a black-market activity. However, Jarmusch (2010) wrote a short piece on California dispensaries and the legal challenges facing cities seeking to regulate them.

Geography figures prominently into a number of discussions regarding the distribution, site location, and zoning questions (see, for Graves: Cannabis City: Medical Marijuana Landscapes in Los Angeles 21

example, Friesthler, *et. al* 2011), but ultimately the legal destiny of marijuana for medicinal, or even for purely recreational purposes, lies in the evolving attitude of politicians and the voting public (Katel 2009). In order to better understand how public opinion on medical marijuana is shaped, it seems logical to examine a common source of information about it: the landscape. Virtually every major thoroughfare in Los Angeles has multiple MMDs. Some are hard to spot and therefore may slip the public eye. Others are impossible to miss and certainly figure into how the public perceives this industry. Using the tools of the landscape geographer, we may gain valuable insight into the way in which marijuana retailing crafts public opinion about the drug, its use, and its users.

Pierce Lewis (1979, 12) called the landscape our “unwitting autobiography,” and though others have leveled challenges at the characterization, many geographers still value Lewis’ metaphor. If we can accept that the landscape has text-like qualities, then landscapes invite analysis of the discourses they generate. It is, however, hoped that, unlike the discourses that play out in media that were consciously crafted, where proponents and critics of medical marijuana are clearly aware of the audiences for their words, the landscape-as-text may be less prone to disingenuous manipulation. In other words, when people talk about the virtues of medical marijuana to news reporters, you can be sure they’ve selected their words careful in order to spin their message. They might even lie. However, those same people may be less aware of how text-like are the qualities of the landscapes they construct. Therefore marijuana vendors may be less intentional in the discourse they create for the public on the landscape. Evidence of the incongruity between message conveyed in print and by the landscape was made apparent in a recent interview appearing in the *Los Angeles Times*. In the article, the owner of the Kush Clubhouse, an MMD located on Venice Beach’s well-known boardwalk, asserted both the clinically proven curative power of cannabis and the strictly nonprofit status of his operation (Hoeffel 2010b). However, the site location and the built landscape of the Kush Clubhouse strongly contradict its owner’s characterization in the newspaper of a business model. First, the prime location undermines the credibility of any contention that this establishment is strictly nonprofit. Rare indeed is the nonprofit organization that can afford to locate its operation inside a beautiful building on Venice Beach. According to the *Times*, this MMD featured a “\$13,000 laminated wood hash bar” where clients could interact and sample the product. Mainstream pharmaceutical retailers would also find the

location both expensive and inaccessible to pharmacy clients. More obvious to the casual observer, however, is the discrepancy between the message expressed in the built landscape and that expressed by its owner in the media. The open-air Victorian building and the purple sign emblazoned with the word “Kush,” a slang term used by recreational users of marijuana, clearly contradict proclamations of the clinical administration of medical care. Instead, this building (see Figure 1 below) proclaims loudly that the product sold inside is for recreational use. This landscape is far more reminiscent of the numerous boardwalk night clubs and boisterous tourist attractions than the typical pharmacy or doctor’s office in Venice. The highlighting of these discrepancies is not intended as an indictment of a dishonest businessman; instead it is a call to consider the landscape as a reasonably reliable source of information about the medical marijuana industry.



*Figure 1.—A medical marijuana dispensary in Venice, California.
(Photo courtesy of www.YoVenice.com)*

Geographers have studied a variety of vice landscapes in hopes of building greater understanding of controversial or covert topics. For example, Symanski (1974) studied the landscapes of legalized prostitution in Nevada, analyzing the manner in which the brothels marketed their services on the landscape. Similarly, Hathaway (1986) chronicled the history of pubs, bars, and taverns in the United States, and in the process created a useful descriptive typology of drinking establishments through time and space. Indeed, at least one type of MMD appears to have taken its landscape cues from “bunker” bars mentioned in Hathaway’s essay (1986, 6).

An important component of the built landscape is the signs used by retailers of medical marijuana to alert customers to their presence. Drucker (1984) demonstrated quite vividly the value of interpreting the landscape through its linguistic features. Drucker's methodological piece provides a valuable guide to interpreting signs, encouraging landscape geographers to deconstruct both the words as well as the sign media (type of sign, fonts, materials, color, etc.), while checking for harmony between text and media.

Data and Methods

If indeed the built landscape, and its linguistic aspects, can be used effectively to decode cultural discourses, then the buildings, signage, and storefront motifs of the medical marijuana industry in Los Angeles is ripe for decoding. In addition to the large dataset that this landscape represents, the vivid variety of expression within it offers a challenging and rich environment for analysis. The goal of the study is to distill the large datasets into a manageable typology—one that illuminates broad trends in marketing of medical marijuana and, by doing so, also illuminates the underlying intentionality of its many retailers.

Address Database

Data was gathered in two separate efforts. One dataset was built by downloading a spreadsheet of 182 MMD business names and addresses from the Los Angeles' City Clerk's website (City Clerk, City of Los Angeles 2010) and an additional spreadsheet of 469 MMDs, many of which were under order by the City Attorney's Office to close, via the *Los Angeles Times* website (*Los Angeles Times* 2011). The two spreadsheets were combined into a single master database so that duplicates could be identified and removed and remaining addresses could be geocoded. A total of 465 MMDs were included in the study.

It should be noted that this data may be incomplete partly because there is no specific licensing agency for such clinics, and also because it appears that some MMDs are happy to operate without the modest licensing requirements that do exist. It is clear that a few MMDs photographed by the author do not appear on the list of either licensed or unlicensed MMDs identified by the city. Nevertheless, for the purposes of this study, the data from the City of Los Angeles/*Los Angeles Times* appears to be the best available, and though it may not be complete, it certainly constitutes a robust sample of MMDs

during the 2007–2010 period. If indeed there is a large number of rogue MMDs operating in the city, and the naming, landscape, and marketing principles differ greatly from the known MMDs, then a bias would enter this dataset.

Photo Database

The second dataset, the photographic record, was compiled by the author and a team of students in the period both before and after the first wave of MMD closures in the spring of 2010. Each photo was electronically geotagged as well as given a variety of descriptive tags described in this paper. The entire photo collection is available at the website “The American Landscape Project” at <http://www.csun.edu/~alproject/>

Content Analysis

The primary methodology used in this study was a two-stage content analysis of the signage displayed by the MMDs in the database. The goal was to produce a typology of MMDs that could be used to better understand this new industry. Content analysis provides a means to convert nominal data on the landscape into scalar data, permitting a wider array of quantitative analysis strategies (Moodie 1971, Cope 2010). The process described below was fairly complex and may seem an unreasonably convoluted method of generating a predictably bland typology of MMD landscapes. However, because debates regarding the legitimacy of medical marijuana have been highly charged and public, it would be all too easy to permit unknown biases to enter an inquiry into the nature of these landscapes. Content analysis offers some protection against bias.

Business Names

In this study, the business names provided to the City of Los Angeles were treated as the primary source of meaning on the landscape. Each word in each business name was analyzed as a discrete unit of analysis. This method permitted the construction of a typology of MMDs based on their business names. The typology, in turn, could be mapped so that spatial variations in the data (marketing, landscape, political discourse) provided by this industry might be compared to neighborhood demographics and/or politics.

Analyzing the data was a multistep process. After the MMDs were mapped and duplicates removed, each word in each MMD’s business name was assigned a numeric identifier corresponding to the MMD

business name, address, neighborhood, ZIP code, and several other pieces of data. Individual words were then sorted alphabetically and placed into one of several dozen categories generated from common themes emerging from terms in the list. This process was repeated several times and after several iterations of the process, the number of categories was winnowed down to a total of eight broad, thematic categories. Six of the eight categories were then used as opposing points on a three-dimensional scatterplot that in turn served as the primary tool for building the final typology of MMDs in Los Angeles. The three axes are described below.

Recreational Drug vs. Clinical Medicine: The X Axis

A critical element in the public debate about medical marijuana is the legitimacy of the plant as a treatment or cure for various ailments. Proponents of the clinical efficacy of the drug insist that marijuana has curative powers hardly different from pills purchased at a corner pharmacy. Skeptics, on the other hand, are quick to argue that many consumers of medical marijuana are mostly recreational users who have obtained their prescription cards from quack doctors who profit by issuing a “license to get high” to anyone who feigns the slightest medical condition. Indeed, several exposés of this practice have appeared in the media. The landscape of medical marijuana certainly provides ammunition for both skeptics and proponents of clinical efficacy/use of the drug, and therefore these two categories were placed on opposite ends of the X axis in the typological scatterplot. Many of MMDs made use of words such as “clinic,” “doctor,” or “patient” that evoke legitimate, mainstream medical practice. Words of this nature were given a value of -5 on an axis opposite those in the recreational category. Words that evoked recreational use among the consumers of medical marijuana were lumped together in the recreation category. Included among these were fantasy terms, such as “dragon,” “euphoric,” “Cloud 9,” and slang terms such as “420,” “Budz,” and “Kush.” Other words that used alternative spellings, e.g., “Farmacy,” unusual compound constructions, and any other term that one would not likely see used by a mainstream medical clinic, pharmacy, or doctor’s office were included in this category. Words in the recreation category were assigned a +5 on the X axis opposite those in the clinical medicine side.

Compassion vs. Crime: The Y Axis

The second, Y, axis was constructed on a continuum featuring marijuana use as an illicit drug on one end, and marijuana as a therapeutic agent in the compassionate management of pain on

the other. Terminology from these two categories was placed on opposite ends of this spectrum because they represented the least- and most-sympathetic images of marijuana users, the back-alley pusher and the recovering cancer patient. Words, especially acronyms, which function to divert attention from, or obfuscate the nature of business conducted at MMDs were given a score of -5 on the Y axis. Common among the items included in the opaque category were acronyms, “TMHR,” “VHC,” etc. Occupying the other end of the spectrum (+5) from the opaque terms were those that chose to call attention to the outcome of the medical therapies. Many of the words used to describe and market MMD invoked “caring,” “healing,” “pain,” and “compassion.”

Birkenstocks vs. Power Ties: The Z Axis

The third, or Z, axis was constructed using terminology that evoked either the natural environment or corporate legitimacy on the other. In some ways, this spectrum mimics the other two in that there is a legitimate vs. anti-legitimate nexus at play. Many of the terms used to build a business name for MMDs in Los Angeles seem to have been adapted from the environmental movement. The fact that marijuana is a plant no doubt invites business owners to use words like “natural,” “green,” or “herbal” in their business names, but the motivation seems to be more deeply rooted. A number of businesses featured terms like “alternative,” “organic,” and “holistic” in what seemed an attempt to link their product to what one might find at a health-food store or organic grocer. Words in this first category were given a +5 on the Z axis. On the other hand, many MMDs seem eager to display their legitimate-business credentials by including common corporate lingo in the name of their operation. Words like “incorporated” and “company,” and abbreviations like “LLC” and “Inc.,” were commonplace, earning a -5 on the Z axis.

Neutral vs. Marketing: The Modifiers

After each of the words that fell on one of the three axes were assigned a value of either + 5 or -5, they were reunited with their corresponding business names. Words not placed on one of the three continuums were used to either enhance or temper the strength of the terms coded and placed on the three continuums. For example, marketing terms such as “premier,” “quality,” or “discount” were assigned a value of 1.5 and were multiplied by the values assigned to terms on the X,Y, and Z axes. So, a business name that used the words “quality” and “kush” got a value of 7.5, further to the right on the X axis toward the “recreational” side of the scatterplot.

Functional terms, including location terms, personal names, and other value-neutral words, were given a value of one (1) and were averaged into the overall score assigned to all words on any of the three axes, thus reducing the value assigned to other words. So for example, if an MMD had a name like “Westside Organic Dispensary,” its score on the Z-axis (associated with the word “organic”) would be reduced to 2.3 from 5 to reflect the ratio of functional terms to the eco-holistic term “organic.”

After each word had been assigned a final value, the entire business name was reassembled in the database. Each business name was then assigned X, Y, and Z values based on the words used in the name and plotted on a 3D scatterplot diagram using the software GeoDa. The structure of the scatterplot created eight potential “quadrants” into which each point in the diagram could fall. The scatterplot also permitted the identification of several clusters of points in the “scatterplot cloud” that formed a basis upon which the final typology was constructed.

Photo Analysis

A secondary analysis of a large photographic database was conducted in order to both validate and ground-truth the content analysis. The photo collection was built by the author and a team of students over a two-semester period in 2007, prior to the initial round of MMD closures. More than one hundred MMDs were photographed by the author and a team of students in 2007–2008. Each photo was put into a database and mapped, permitting it to be matched and compared with the corresponding point in the scatterplot. The prime value of the photographic database was to ensure the assumptions used in, and the findings generated by, the more linguistic content analysis corresponded logically to the landscape experience of those who observe these businesses.

Findings—A Typology of MMDs in Los Angeles

Analysis of the scatterplot diagram revealed that not all of the eight potential quadrants were equally well populated. However, several clusters of business names were readily identifiable around the extremities of the three axes and at the center of the graph. Those at the center of the graph had to be further analyzed to distinguish those business names that trended toward the middle, because they incorporated a large ratio of functional to scored terms, from those which included pairs of terms on the opposite end of one or more

axes. Presented below are the categories produced by the largest clusters within the scatterplots, and a brief discussion of the characteristics defining each category. Figure 2 below displays the frequency and percentage of each type and subtype of MMD in Los Angeles.

Type	SubType	Count	Percent
Bunker	—	69	14.84
Medical Care	Compassionate Care	80	17.20
	Corporate Clinic	57	12.26
	Eco Care	30	6.45
Granola	Eco Clinic	48	10.32
Recreational Use	Eco-Holistic	65	13.98
	Stoner Care	27	5.81
	Stoner Fantasy	84	18.06
No Category	—	5	1.08
Grand Total		465	100

Figure 2.—Counts and percentages of the several varieties of medical marijuana clinics in Los Angeles

Medical Care

Together, the compassionate-care and corporate clinics constitute about thirty percent of all MMDs in Los Angeles, but they are more popular in some neighborhoods than others. For example, in Northridge’s 91324 ZIP code, six of eight MMDs are “corporate clinics,” perhaps reflecting the values of this largely white, middle-class neighborhood. A similar pattern is evident in Woodland Hills, the Playa Vista/Westchester districts near LAX, and parts of North Hollywood.

Compassionate Care

The most common motifs among MMDs are those evoking notions of compassion, healing, and pain management. Numerous MMDs use business names like “Valley Compassionate Care” and “California Pain Management Clinic.” Interestingly, nearly a quarter of the 182 MMDs originally licensed by the City of Los Angeles were found in this category, perhaps reflecting the public sentiment leveraged by proponents of Proposition 215. Interestingly, only about 11 percent of the non-licensed MMDs ordered to cease operations in 2010 were categorized as “compassionate care” dispensaries. This

indicates that later entrants into the industry have been less likely to invoke compassion than their pioneering counterparts.

Corporate Clinics

Another group of MMDs chose to position themselves more squarely in line with mainstream medical clinics, doctor's offices, and hospitals. These dispensaries have names like "Valley Health Center" and "Medical Wellness Center" or "Infinity Medical Alliance." Many of the exteriors of these MMDs are painted in subdued colors and feature rather ordinary signs helping reinforce the notion that marijuana is a legitimate, therapeutic drug (see Figure 3 below).



Figure 2.—This MMD could pass for a traditional neighborhood pharmacy. The numbers "420," a code for marijuana, are barely noticeable on the sign and would go unnoticed by all but recreational users of the drug. (Photo: Lisa Harrison.)

Granola Dispensaries

Over thirty percent of MMDs were classified as "Granola Dispensaries" because they relied primarily on an appeal to the natural environment, holistic therapy, and/or alternative medicine. Granola dispensaries were most commonly found in some of LA's tonier neighborhoods such as Sherman Oaks, the West Side, San Pedro, and Venice. Because there were so many MMDs using this motif, this category was split into three subcategories. The "Eco-Care" category

included MMDs that combined environmental and compassionate-care motifs to convey “natural, holistic, compassionate care.” MMDs in this category were named things like “Organic Caregivers” and “Nature’s Way Compassion Group.” Another subcategory, dubbed “Eco-Clinics,” combined the eco-holistic-alternative themes with words conjuring images of mainstream medicine to produce MMD names such as “Green Medicine” and “Holistic Patient Treatment Center” (see Figure 4). The largest subgroup in the Granola Dispensaries category were those that wholly marketed themselves as green, natural, holistic, herbal, and/or alternative. With names like “Organica,” “Supplemental Organic Solutions,” and “Holistic Alternatives, Inc.,” the “Eco-Holistic” MMDs can hardly be distinguished from organic grocers such as Pacific Greens or Nature Mart. Similar to the bunker store strategy, the eco-holistic stores blend easily into the background and figure to arouse little opposition from opponents of medical marijuana.



Figure 4.—This sign reserves parking space for clients of this Eco-Care Clinic near Eagle Rock, California.

Illicit Use Dispensaries

Several types of MMDs had landscapes that suggested they were involved in the illicit, rather than medicinal or holistic, use of marijuana. The bunker dispensaries appear to be hiding from authorities and the stoner dispensaries openly marketing the recreational aspects of marijuana. Mapped as one, it is possible to discern several neighborhoods where these strategies are favored. Near the campus of USC, there is a cluster of shops in the stoner fantasy and bunker dispensary category, perhaps not surprising given the demographics. Interestingly, the ZIP codes near UCLA, though also clearly attractive to MMDs, have more-even distribution of MMD types. Other neighborhoods that appear more attractive to the illicit-use type of MMD include the Fairfax-Hollywood corridor districts and the Eastern San Fernando Valley.

Bunker Dispensaries

About fifteen percent of the MMDs in Los Angeles appear committed to obscuring the nature of their business to the general public. Marijuana's long-standing status as an illegal substance, along with the continuing uncertainty surrounding its standing, seems to have produced a strong impulse among MMDs to hide. Many MMDs use names so obtuse or opaque that all but the most observant passers-by would both notice and deduce the business conducted therein. Frequently, the only indication that a business is an MMD is the use of an acronym and green lettering on the sign. It should be noted that after several months of photographing MMDs, students reported not only beginning to notice MMDs they had overlooked before, but also an evolving suspicion that *every* business having a sign with an acronym using green letters was an MMD. Controversial businesses have long used similar strategies to avoid public scrutiny or violence (see, for example, Hathaway 1986). Taverns, sex shops, gay nightclubs, and abortion clinics count among the other bunker places on the American landscape. Indeed, several bunker MMDs found in Los Angeles' San Fernando Valley seemed to have taken design cues from nearby nondescript studios that make pornographic movies (see Figure 5 below).



Figure 5.—A classic, “Bunker”-style MMD in Chatsworth, California.

Stoner-Recreation

The final two categories of MMDs are those that make a primary appeal to recreational use of marijuana. Combined, MMDs using recreational motifs constitute nearly one-fourth of all dispensaries. Perhaps more importantly, these MMDs tend to be most noticeable on the landscape and stand to affect public opinion most profoundly. Some of the MMDs in the recreation category (twenty-seven) try to mitigate the implications of an outright appeal to partying by also making an appeal to compassionate care, but those are a minority. Those MMDs were categorized as “Stoner Care.” Names like “Green Dragon Caregivers” and “Grateful Meds” counted among the twenty-seven MMDs in this category. The remaining MMDs in the recreational-use category were placed in the “Stoner Fantasy” subcategory because they most boldly evoked the recreational effects of marijuana without combining it with a strong appeal to other common motifs. Almost twenty percent of MMDs in Los Angeles use business names such as “Always 420,” “Chronic Creations,” “Kush Corner,” and “Hot Spot” in an attempt to market their product in an increasingly competitive environment and to patients who more recently obtained a marijuana prescription card. Slang terms and signs featuring psychedelic paint jobs are common. Purple buildings, perhaps a reference to the drug anthem by Jimi Hendrix, “Purple Haze,” are also common (see Figure 6). Several businesses also incorporate dragon imagery, perhaps a reference to the children’s song “Puff the Magic Dragon,” long rumored to be a secretive ode in praise of marijuana.

Conclusion

Though a common discourse regarding medical marijuana has yet to be established in Los Angeles, there are some common elements to the cacophony of messages apparent in the landscape built by MMDs in the past five years. The most common element evident in this landscape is a general air of amateurishness that pervades the place-marketing efforts of marijuana retailers. Many MMDs are reminiscent of small mom-and-pop stores that dot run-down commercial strips in immigrant neighborhoods. This is hardly surprising, given the short history of the industry, their legal mandate to operate as nonprofit collectives, and the lack of mainstream capital involvement. It does appear that several themes within the overall discourse have begun to emerge and that these themes appear to be more popular in some neighborhoods than others. Competing visions of this industry are vividly displayed on the landscape, in-



Figure 6.—Green Joy in Woodland Hills, California, was classified as a “Stoner Fantasy” MMD.

viting scrutiny from a public that understandably remains skeptical about the intentions of the operators of MMDs and of the clients, patients, customers, or stoners who frequent these establishments.

If one were to add the MMDs utilizing granola-care and clinic themes with the MMDs using the clinical medicine and compassionate-care categories, a category would emerge containing nearly half of all MMDs. Add the “stoner care” category, and it becomes clear that this new category is the most popular motif used to market medical cannabis in Los Angeles. Perhaps this should come as no surprise, given that the original impetus for legalizing marijuana came from proponents who effectively leveraged images of cancer patients and elderly glaucoma victims to help decriminalize the plant.

However, if medical marijuana is to gain legitimacy in the eyes of the public, it must be established more firmly as a serious remedy, cure, or treatment for the many ailments that proponents claim it serves. Challenging this discourse are the recreational motifs that, though fewer in number than the compassionate medicine motifs, are far more visible on the built landscape. A recent television news story regarding the Obama Administration’s renewed enforcement

efforts featured images of MMDs from the “Stoner Fantasy” category exclusively to sensationalize the story.

It will be difficult for the public, politicians, and law enforcement to accept medical marijuana as long as the landscape continues to send mixed messages regarding the medicinal value of cannabis. Advocates of medical marijuana are disadvantaged by the very characteristics of the landscapes they (or some of them) have created. Frequently as prominent as a local dentist office, the medical-themed MMDs stand mute as their noisy recreational pot shops scream for attention from potential clients, perhaps inadvertently attracting negative attention from skeptics of the entire enterprise. As long as the recreational uses of cannabis figure prominently in the marketing strategies splashed across the landscape, those who hope to configure the discourse on cannabis around its medical value will find their efforts frustrated.

References

- Bouchard, M., and P. Tremblay. 2005. Risks of Arrest Across Drug Markets: A Capture-recapture Analysis of “Hidden” Dealer and User Populations. *Journal of Drug Issues* 35(4):733.
- City of Los Angeles, City Clerk’s Office. 2010. *Medical Marijuana Dispensaries*. <http://cityclerk.lacity.org/cps/pdf/mmregistration-list2.pdf> [Accessed 15 November 2011].
- Cope, M. 2010. Coding Transcripts and Dairies. In: N. Clifford *et al.*, eds. *Key Methods in Geography*. 440–452. Los Angeles: Sage.
- Drucker, J. 1984. Language on the Landscape. *Landscape*. 28:7–13.
- Freisthler, B. *et al.* 2011. Evaluating Medical Marijuana Dispensary Policies: Spatial Methods for the Study of Environmentally-Based Interventions. *California Center for Population Research, On-Line Working Paper Series*. <http://papers.ccpr.ucla.edu/papers/PWP-CCPR-2011-011/PWP-CCPR-2011-011.pdf> [Accessed 15 November 2011].
- Hathaway, J. 1986. History of the American Drinking Place. *Landscape* 29:1–9.
- Hoefel, J. 2010a. L.A. orders 439 medical marijuana dispensaries to close. *Los Angeles Times*. 5 May. <http://articles.latimes.com/2010/may/05/local/la-me-0505-medical-marijuana-20100505> [Accessed 15 November 2011].
- . 2010b. Move it, bud, pot outlets are told. *Los Angeles Times*. 7 June. <http://articles.latimes.com/2010/jun/07/local/la-me-pot-shutdown-20100607> [Accessed 15 November 2011].

- Jansen, A. 1990. Hotelling's location game and a geography of hashish and marijuana. *Geoforum*. 21(3):277–287.
- Katel, P. 2009. Legalizing Marijuana. *CQ Researcher*. 19(2):525–48
Last modified July 21, 2010. <http://library.cqpress.com/cqresearcher/cqresrre2009061200>. [Accessed 15 November 2011].
- Lewis, P. F. 1979. Axioms for Reading the Landscape. In: D. Meinig, ed. *The Interpretation of Ordinary Landscapes*. 11–33. New York: Oxford University Press.
- Los Angeles Times*. 2011. Status of L.A. medical marijuana dispensaries. [Spreadsheet] <http://spreadsheets.latimes.com/status-of-la-marijuana-dispensaries/>. [Accessed 15 November 2011].
- Moodie, D. 1971. Content Analysis: A Method for Historical Geography. *Area*. 3(3):146–149.
- Raphael, R. 1985. *Cash Crop*. Mendocino, California: Ridge Times Press.
- Symanski, R. 1974. Prostitution in Nevada. *Annals of the Association of American Geographers*. 6(3):357–377.
- Vilalta, C. 2010. The Spatial Dynamics and Socioeconomic Correlates of Drug Arrests in Mexico City. *Applied Geography*. 30(2):263–270.

Patterns of Population Change in California, 2000–2010

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Abstract

The primary purpose of this research was to describe and understand distributional changes between 2000 and 2010 in California's total population and its four leading race/ethnic groups: Asians, Blacks, Hispanics, and Whites. We described these changes by means of maps and obtained greater detail by using as area units the state's 387 census county divisions rather than its fifty-eight counties. Hispanics and Asians had very few areas of decline. Black numbers decreased most in Los Angeles and Alameda Counties, and White populations declined there and in older parts of some surrounding counties, as well as in San Diego. All four groups showed greatest gains in outer suburban areas and beyond, especially in the interior of the state. The increased dispersal of population continued trends of earlier decades, further reducing race and ethnic concentrations in older coastal cities as well as their political influence. The leading growth area for all groups in Southern California was Riverside County; in Northern California it was the region extending from the San Francisco Bay cities into the metropolitan areas of Modesto, Stockton, and Sacramento. Although the maps might suggest that the four groups are becoming more alike in their distributions, comparing their distributions in terms of neighborhoods shows very small changes in levels of segregation since 2000.

THE 2000–2010 DECADE saw California's total population increase by ten percent, but the four leading race/ethnic groups differed substantially in their trends. NonHispanic Whites declined by five percent; and Blacks, Hispanics, and Asians increased by two, twenty-eight, and thirty-two percent respectively. In absolute numbers, Hispanics showed the greatest growth.

The goal of our research was to investigate how these trends played out in various localities throughout the state. Because each of the groups is so numerically large and important, such geographical

changes represent trends of interest to a wide range of scholars and students, elected officials, and people in business and education.

In a political and cultural sense, California can be viewed spatially as divided between Democratic strongholds in coastal cities and Republican predominance in most rural areas and the interior (Mehta 2011). Any net shift of total population will be reflected in a changed political geography, as new electoral districts created on the basis of the 2010 Census will reflect demographic shifts between 2000 and 2010. Appropriate representation of the groups we studied is also a concern in creating new electoral districts. To the extent that these four groups can be characterized by political party affiliation, we can expect changes in patterns of political party preference and party strength.

We believe that mapping is a useful and visually powerful way to describe population changes over the past decade. Maps enable a person somewhat familiar with the state's basic geography to readily grasp general trends over large areas as well as some specifics in better-known localities. California's fifty-eight counties are commonly used as the area units for statewide mapping, and county-level maps of total absolute and percentage change 2000–2010 are already available online (California Department of Finance 2011). Nevertheless, we expected that rates of change and numbers of people involved varied significantly within counties and that localities were the key to the geography of housing prices and the relative attraction of places. Accordingly, we mapped population changes with U.S. Census data for the state's 387 census county divisions (CCDs).

Because we were also interested in possible social implications of the patterns of change, and because mapping at the CCD scale cannot show the extent to which members of different groups live in the same neighborhoods, we made use of previous calculations of a widely used index of segregation to measure change over the last decade in the degree to which Whites were living in the same neighborhoods as each of the three other groups.

Methods

Population data. Our research is based on decennial census data acquired from Summary File 1 of Census 2000 (U.S. Census Bureau 2001) and from the 2010 Redistricting File for California released in March 2011 (U.S. Census Bureau 2011). These data are especially

valuable because they are based on a complete count of the population.

The ethnic and racial data that we use are based on two separate data items from the short decennial census questionnaire that is completed by someone in each household. What is usually called the race question asks which of the listed race groups each person identifies with most strongly. The Asian group is the aggregation of people who reported on the race question some specific national origin or identity in East, South, or Southeast Asia. Most of the Black group are U.S.-born African-Americans, but Black immigrants are included also. Some people reported more than one racial identity on the census questionnaire. Because only 2.6 percent of the state's population chose to do that in 2010, we measured race groups in terms of the numbers reporting only a single race identity.

Another question asks whether a person is of Hispanic, Latino, or Spanish origin. In scholarly practice, "Hispanic" and "Latino" are synonymous. Although some Hispanics have ancestors who were living in northern Mexico when that area became U.S. territory in 1848, a much larger group is composed of those who migrated from Mexico, Central America, South America, the Caribbean, and Spain and their U.S.-born descendants.

Latinos can be of any race, though nationally fifty-three percent reported themselves as White (Ennis, Rios-Vargas, and Albert 2011). However, the group that most Californians call Whites does not include Latinos but represents people with family origins primarily in Europe or Southwest Asia. As a result, most scholars measure this population in census data as NonHispanic Whites, although from this point on we refer to them simply as Whites.

The decennial census data are the best available and are generally considered to be of high quality. However, their completeness can be questioned, particularly with respect to the count of unauthorized immigrants. How many of these were not counted in the decennial censuses is not known, but substantial changes between 2000 and 2010 in the numbers and locations of unauthorized immigrants could diminish the accuracy of our maps. In 2010 there were an estimated 2.6 million unauthorized foreign-born residents in California, representing seven percent of the state's total population (Passel and Cohn 2011). Another recent demographic estimate of this population in California shows a six-percent increase between

2001 and 2008 (Hill and Johnson 2011), though departures due to the recession beginning in 2008 may have negated much of that increase. Estimates by Hill and Johnson show substantial shifts of this population between 2001 and 2008, most prominently into Riverside and San Bernardino Counties and out of Los Angeles, Orange, and Santa Clara Counties. To the extent that estimated county shifts are correct and unauthorized immigrants did not complete census questionnaires, our census-based maps of change probably understate the actual changes that have occurred. The greatest error would concern our map of Hispanic change. This is because seventy percent of unauthorized immigrants in the U.S. are estimated to be from Mexico, with another seventeen percent coming from some other Latin American country (Passel and Cohn 2011).

Data for CCDs. The data for the maps were acquired for the 387 California census county divisions of Census 2000. Data for the 397 census county divisions of 2010 were adjusted to the older boundaries. The census county division (CCD) is an area unit created by the U.S. Census Bureau and state and local government representatives for the purpose of data representation (U.S. Census Bureau 2003). There are CCDs in California and nineteen other states, most commonly in the West, where there are no legally established minor civil divisions or where these have no administrative functions or are not widely used. CCDs have no legal function other than portraying data at a scale between that of the county and the usually much smaller area of a census tract, which generally represents a neighborhood. CCD boundaries generally follow visible features, and they are usually given a name that is well known locally.

Design of maps. Because changes in actual numbers of people and percentage change are both important and complementary ways of looking at change, we used both dot and choropleth mapping techniques. Both types of maps were created using ArcGIS software. On all maps we highlighted county boundaries to help people somewhat familiar with California geography orient themselves.

With respect to dot maps, those CCDs gaining population are represented with black dots and those CCDs losing population represented with white dots, a technique that we developed earlier in a color version (Allen and Turner 2002, Turner and Allen 2010). We wished to choose values for each dot that would be effective on maps where groups differed greatly in population sizes. Because the Asian and Black populations were much smaller than the total, Hispanic,

and White populations, we set the dot value for change in Asians and Blacks at 500 persons per dot, and the dot value for change in the larger populations at 1,000 persons per dot. To overcome the software's random placement of dots within a CCD, all federal lands were excluded from the CCD polygons so that the dot locations more closely approximated the location of the populated areas.

On choropleth maps we selected a small number of percentage increase or decrease categories that we thought would illuminate relative change over many different types of CCDs, overlaying a point symbol pattern in those CCDs with fewer than 100 of the group. Place names were added to help in identifying particular cities and towns, especially where detailed patterns of change might be of interest. The federal land exclusion was not applied to choropleth maps.

Census Bureau errors in the locations of a few prison populations in Census 2000 led to extremes of percentage change in our initial choropleth mapping. These errors were similar to those involving various group-quarters populations at the census-tract level that we had found in preparing an earlier publication (Allen and Turner 2002). Using group-quarters tables from SF1 for 2000 and 2010, we corrected these isolated prison-data problems. The need for these changes was confirmed by consulting revised counts published later by the Census Bureau (U.S. Census Bureau 2005).

Although the maps can portray general and specific patterns, we downloaded population data for all fifty-eight counties, which enabled us to create tables for an appendix. Tables A-J were designed to identify for each race/ethnic group the five counties with the greatest percentage change and to show the numbers of persons involved. Only counties with at least 1,000 of the group in 2010 are included in these appendix tables.

Interpretation of the mapped patterns. Within the state, spatial patterns of total and group population change reflect mostly net residential movement, either local residential mobility or migration. Rapid changes in numbers in various CCDs mean that some places have clearly become more or less attractive to members of a group. We do not attempt a detailed explanation of the mapped patterns, because the factors involved are complex and difficult to uncover, especially when this project uses no direct indicator of group differences in economic resources.

Nevertheless, we explain later why the increase of all groups in the state's interior probably reflected people's desire to avoid the higher housing prices typically found near the coast. Also, in our discussions of individual groups, we sometimes note their growth on the outskirts of the cities, where newer and often more-attractive housing tends to be located. In localities where all groups showed large percentage increases, we suspect there has been recent home development on former agricultural or other undeveloped land. Because Whites were historically the first major group to occupy suburbs, places where other groups increased but Whites decreased generally involved movement of other groups into housing formerly occupied by Whites.

Statewide Change in Total Population

We set a context for our research on geographical patterns by discussing briefly two aspects of population change for California as a whole during the 2000–2010 decade. First we show the relative importance of natural increase and net migration as direct causes of population growth. Then we present the growth rates and population totals for several key populations, including the state's total population.

Components of growth. Natural increase, which represents the number of births minus the number of deaths, has played the greatest role in the state's population growth over the past decade (California Department of Finance 2010a) (Figure 1). Net immigration represents the number of persons migrating into the state from other countries minus those moving out to other countries. Although many Californians might assume that net immigration is the greatest factor in the state's growth, this has been less important than natural increase. Net domestic migration represents the difference between the population coming to California from other states and those leaving California for other states. Although the state experienced a net inflow from other states during the first half of the decade, the net flow was out of California during more recent years. In the years since 2006, most people leaving California went to Texas, the largest interstate migration flow in the country for three of the years (Ihrke, Faber, and Koerber 2011). Other leading destinations were Arizona, Nevada, and Washington, with seventy-two percent of migrants nationwide reporting that they moved for employment and family reasons. It is likely that the leading state destinations for Californians differed according to race/ethnic group, if the years 1995–2000 are any guide (Allen and Turner 2007). However, the recession that began in 2008

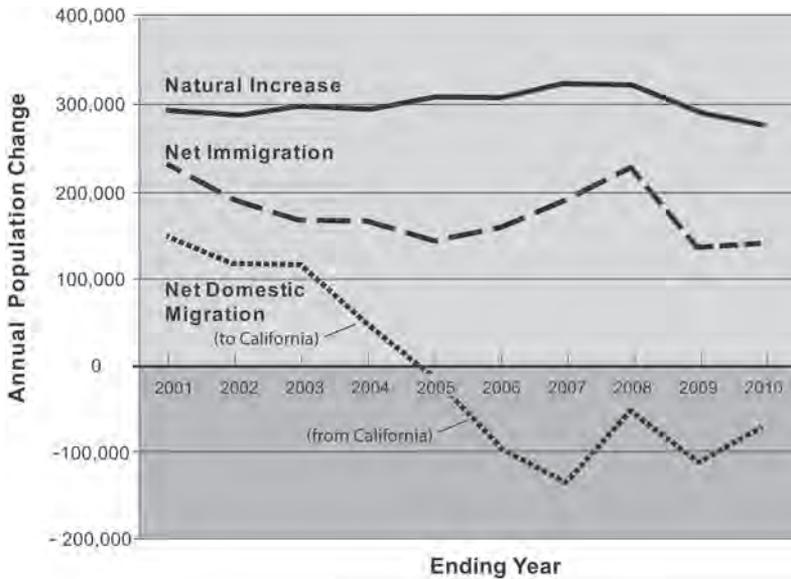


Figure 1.—Components of Annual Population Change, California, 2000–2010.

tended, like most recessions, to reduce the sheer number of domestic migrants—usually measured as people who move to another county or state (Ihrke, Faber, and Koerber 2011).

Race/ethnic groups differed in the relative importance of net migration and natural increase as influences behind their changing numbers. For example, both Whites and Blacks had net out-migration from California during most years since 2000, but Whites also experienced a natural decrease and Blacks a natural increase (California Department of Finance 2010b). Net migration (including immigration) was the leading factor behind the growing Asian population, but natural increase explained more of Hispanic increase. The relative importance of these factors for specific groups was similar to that of the last half of the 1990s (Allen and Turner 2007).

Statewide totals and change. Over the last century Whites have been the largest group in California, but as of 2010 the number of Hispanics or Latinos was almost as large (Table 1). The state’s White population has been declining slightly, while Latino numbers have been increasing due to both natural increase and net immigration. The next-largest group is Asians. Their numbers have been growing rapidly as a result of net immigration so that they are now more than double the size of the Black population, which as recently as Allen and Turner: Patterns of Population Change in CA, 2000–2010 43

1980 outnumbered Asians in California (U.S. Census Bureau 2002). Although maps of the smaller race groups could be produced, we have selected only the four largest groups in the state for mapping and analysis. Because we did not list all the possible tabulated responses, the numbers in the race/ethnic groups (Table 1) do not add up exactly to the California total.

Table 1. Population totals in 2010 and percent change 2000–2010.

Race/Ethnic Groups	Percent change	Population 2010
NonHispanic Whites	-5.4	14,956,253
Hispanics (Latinos)	27.8	14,013,719
Asians	31.5	4,861,007
Blacks (African Americans)	1.6	2,227,072
American Indians and Alaska Natives	8.8	362,801
Native Hawaiians and Other Pacific Islanders	23.9	128,577
Total California population	10.0	37,253,956

Patterns of Change in Total Population

The map of total population change (Figure 2) shows the cumulative result of the distributional changes of the various race/ethnic groups. There are numerous areas of substantial growth extending from near Redding in Shasta County in the north to the agricultural Imperial Valley, focused on El Centro, in the desert east of San Diego. Growth was infrequent in rugged mountain and desert areas (not shown) far from established towns. Population growth in many sections of the interior is evident. Altogether, the dispersed pattern of population growth, a key component of what is often called sprawl, continues the geographical expansion of suburbanization that has been occurring outside American cities for more than a half century (Kaplan, Wheeler, and Holloway 2009).

Figure 2 demonstrates the continued shift to the interior that researchers using 2005 and earlier data had expected, although the economic recession beginning in 2008 may have reduced that net migration. Kotkin and Frey (2007) identified the Central Valley and the interior of Southern California together as the region of greatest expected growth in both total population and economy, dubbing it the “Third California.” In another study, Johnson and Hayes (2004) divided the Central Valley into four different regions in order to determine how migration flows and migrant characteristics differed among the regions. Although their data were from 1995 through

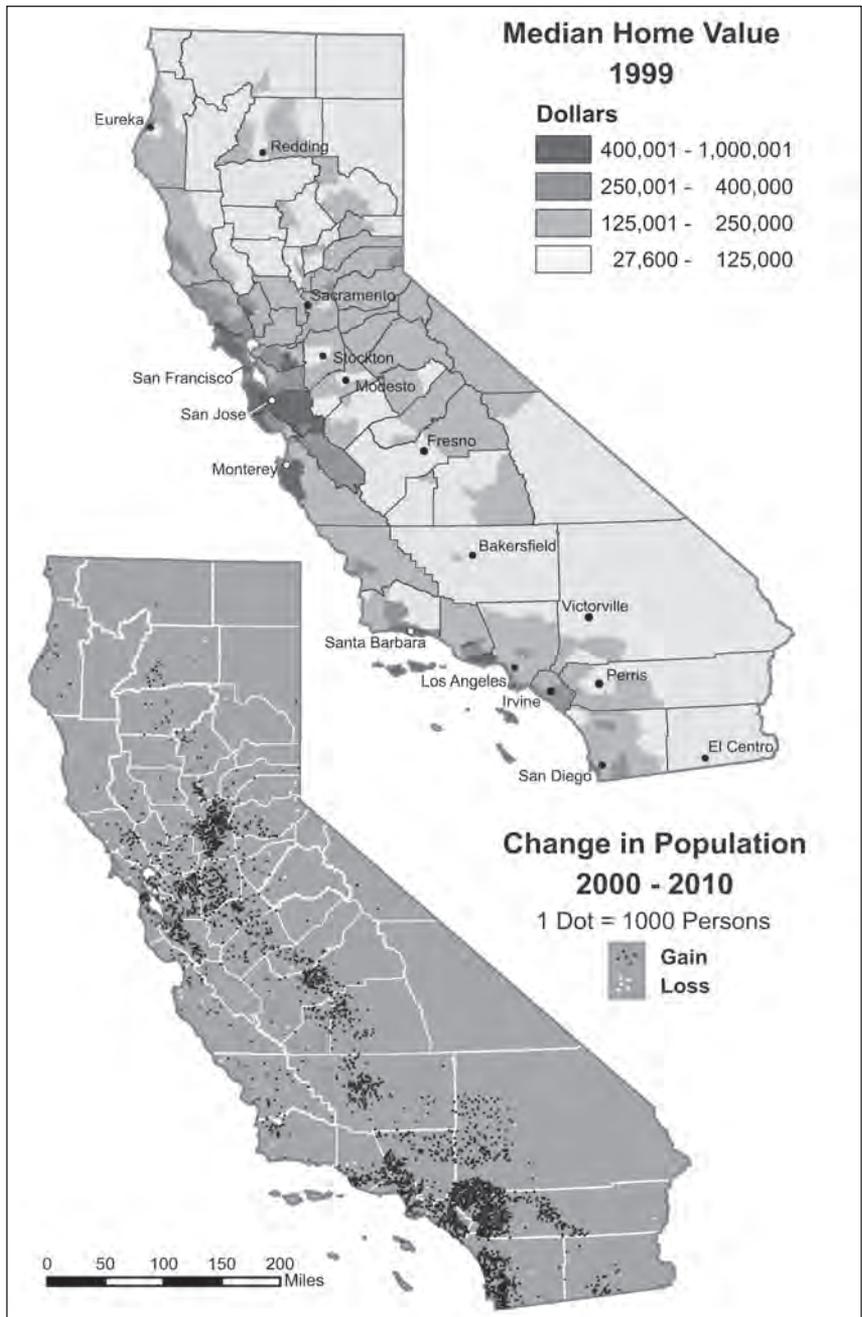


Figure 2.—Total Population Change, 2000–2010; Median Home Value, 1999.

2003, the findings of Johnson and Hayes provide an elaboration of patterns we mapped.

For example, net migration from elsewhere in California was largest into the Sacramento metropolitan area and the North San Joaquin Valley (San Joaquin, Stanislaus, and Merced Counties). Migrants to the Sacramento area were typically employed in that area, whereas migrants to San Joaquin, Stanislaus, and Merced Counties more often commuted to jobs in the Bay Area. The Southern San Joaquin Valley (Kern through Madera counties) and Upper Sacramento Valley (Sutter through Shasta counties) received fewer migrants from the rest of the state than the other regions. New arrivals to the Southern San Joaquin Valley tended to be from other countries, to some extent replacing the region's net migration to other states. Retirees were more common among migrants to the Upper Sacramento Valley, which tended to lose college-educated people. At a metropolitan scale, the characteristics of immigrants of various origins in different localities within the Sacramento area have been richly described and explained by Datel and Dingemans (2008).

Decreases in total population are unusual in California, where housing remains valuable, but some local decreases can be seen on Figure 2. Because of the burst housing bubble and recession that characterized the years 2008–2010, we suspect that most population losses on this map reflect vacancies, where previous residents departed and were not replaced. This may have been due to foreclosures or owners choosing to leave homes where mortgage balances were higher than the value of their homes. Declines evident in the greater San Francisco Bay Area, Los Angeles County, and the Lake Tahoe area may represent especially severe losses of this kind.

The actual reasons behind localized population declines since 2000, or other features on this or other maps, can be investigated by first mapping change between 2000 and 2010 with the same sources we used but at the level of census tracts or blocks, in order to isolate neighborhoods showing the greatest effects. Then, observation and interviewing of neighborhood residents can uncover the most likely factors involved in the losses being studied.

Median home value. It is likely that many of the new residents who dispersed into the state's interior came from coastal cities and suburbs. We included a map of median home value because in the 1990s and 2003 housing was the leading expressed reason for mov-

ing between more-expensive coastal regions of the state and the less-costly Central Valley, as migrants sought lower-priced housing or homeownership (Johnson and Hayes 2004). Home value figures are based on homeowners' estimates of home value in 1999 because it was the lower-priced values in certain places that helped make those places more attractive to potential in-movers.

The legend showing dollar amounts of median values is less important than the relative housing prices in different places, where the lower values in the interior are evident. For example, in Southern California, most areas near the coast had median values above \$125,000, whereas 100 miles to the interior, homes had lower values. In that interior, the lower home prices in and around Perris compared to surrounding localities have made that section of Riverside County especially attractive to some migrants. In Orange County, higher home values were found in the newer developments from Irvine southward, but across the line into northwestern San Diego County is Camp Pendleton, a Marine Corps base, where homes had lower value. Although median home values in much of the interior of Northern California were between \$250,000 and \$400,000, this was still less than home values over much of the Bay Area.

Patterns of Change in Asians

There were large increases in Asian numbers in the major population centers of the state—the San Francisco Bay Area and its extension eastward to Stockton and Sacramento, and much of Southern California, especially in Riverside County (Figure 3). The more than doubling of that county's Asians from an already large base of about one hundred thousand in the year 2000 represents the single most important county change in Asian locations in the state. With the different nationality-based groups included in the Asian category, Riverside County may see significant commercial and residential districts that are multiethnic and pan-Asian, just as these appeared earlier in Los Angeles County (Li 1998, Allen and Turner 2002).

Numbers of Asians even tripled in some localities, usually on the fringe of major population centers (Table C). This occurred in and around the Delta region east of the Bay Area and in Murrieta in Southern California's Riverside County. The Asian population of the Sacramento area tripled in and around Lincoln in Placer County, and west of Bakersfield a similar growth occurred. Some Asians moved into areas where few had been living in 2000, such as Shasta and Butte Counties and around Santa Maria in northern Santa Barbara

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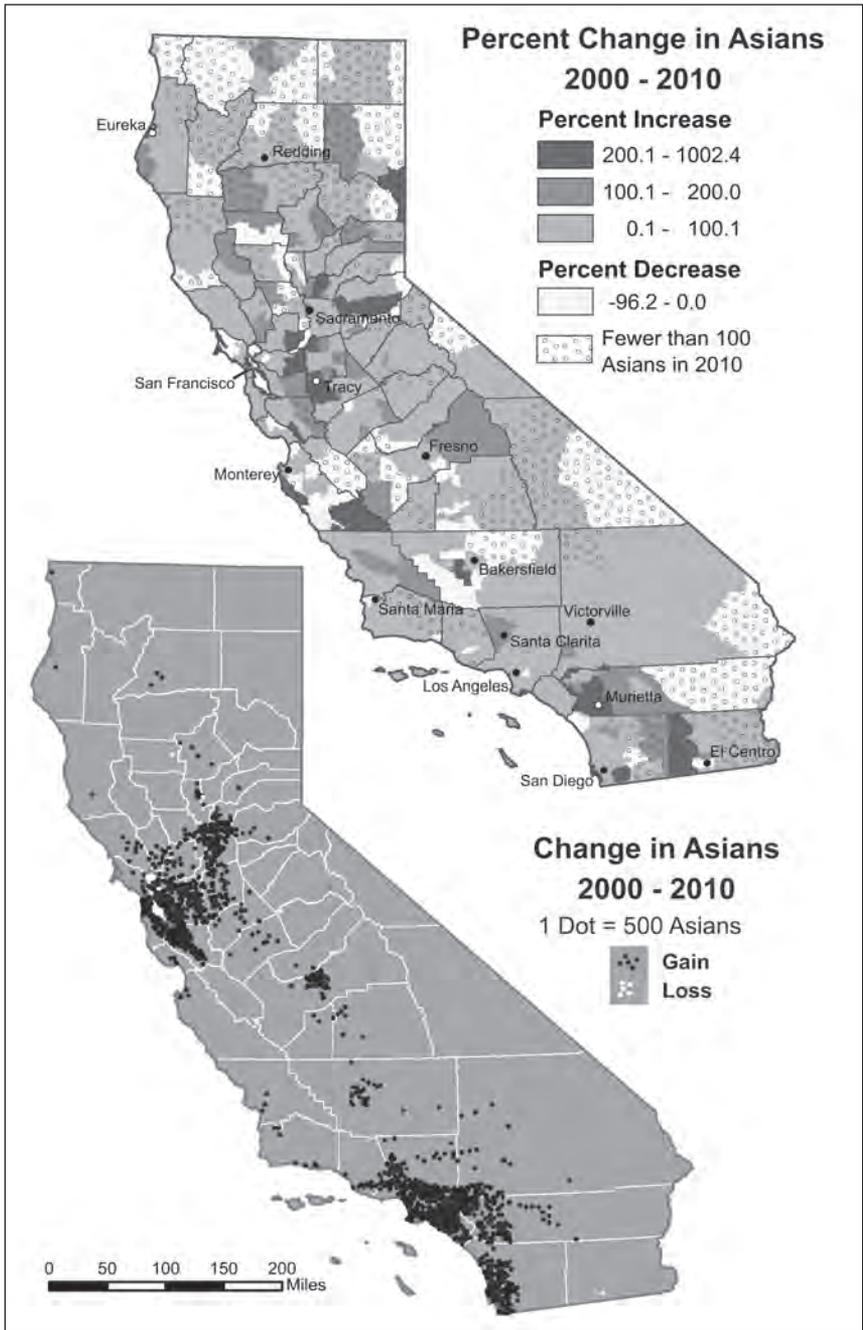


Figure 3.—Asian Population Change, 2000–2010.

County, but the total numbers involved were not large. The line of dots in central Riverside County shows a similar Asian movement into the Coachella Valley and the Palm Springs area.

The theoretical model of spatial assimilation suggests that Asians who live farther from residential concentrations of their group, such as those discussed in the previous paragraph, are more assimilated to the U.S. mainstream culture (Massey 1985). This notion has been supported by evidence from greater Los Angeles that Asians in more outlying places have been somewhat more likely to be U.S.-born and proficient in English, compared to those who remain near their concentrated settlements (Allen and Turner 1996). Among immigrants (the foreign-born), those who live farther away from their ethnic concentrations are also more likely to be longer residents of the U.S. and naturalized citizens. We expect that such characterizations remain, to some extent, valid today, despite the many individuals whose characteristics and residential locations do not fit this pattern. On the other hand, the old notion that Asian neighborhood concentrations or enclaves are necessarily poor areas has been shown to be false, based on evidence from the Bay Area and greater Los Angeles (Allen and Turner 2009).

Among counties with very low percentage increases (Table D), the twelve percent Asian growth in San Francisco is most significant because that county's Asian base population was so large. In fact, the largest absolute population increase for any group in San Francisco was that of Asians. Although not shown on a table, Asians in Santa Clara County to the south of San Francisco increased by thirty-three percent to a total of over a half-million, more than twice the Asian population of San Francisco. Asians in the Silicon Valley section of that county have been closely connected with high-tech industries, as discussed in detail by Li and Park (2006).

White dots are rare on the map. One such place includes part of Yuba City, where the decline may have resulted from residential shifts of the area's long-established Asian Indian community. Areas where Asians decreased in numbers were generally rural CCDs with fewer than 100 Asians.

Patterns of Change in Blacks

Although the statewide increase in Blacks was less than two percent, the map portrays substantial changes in distribution (Figure 4). Most dramatic are the declines in black population in the older cities of

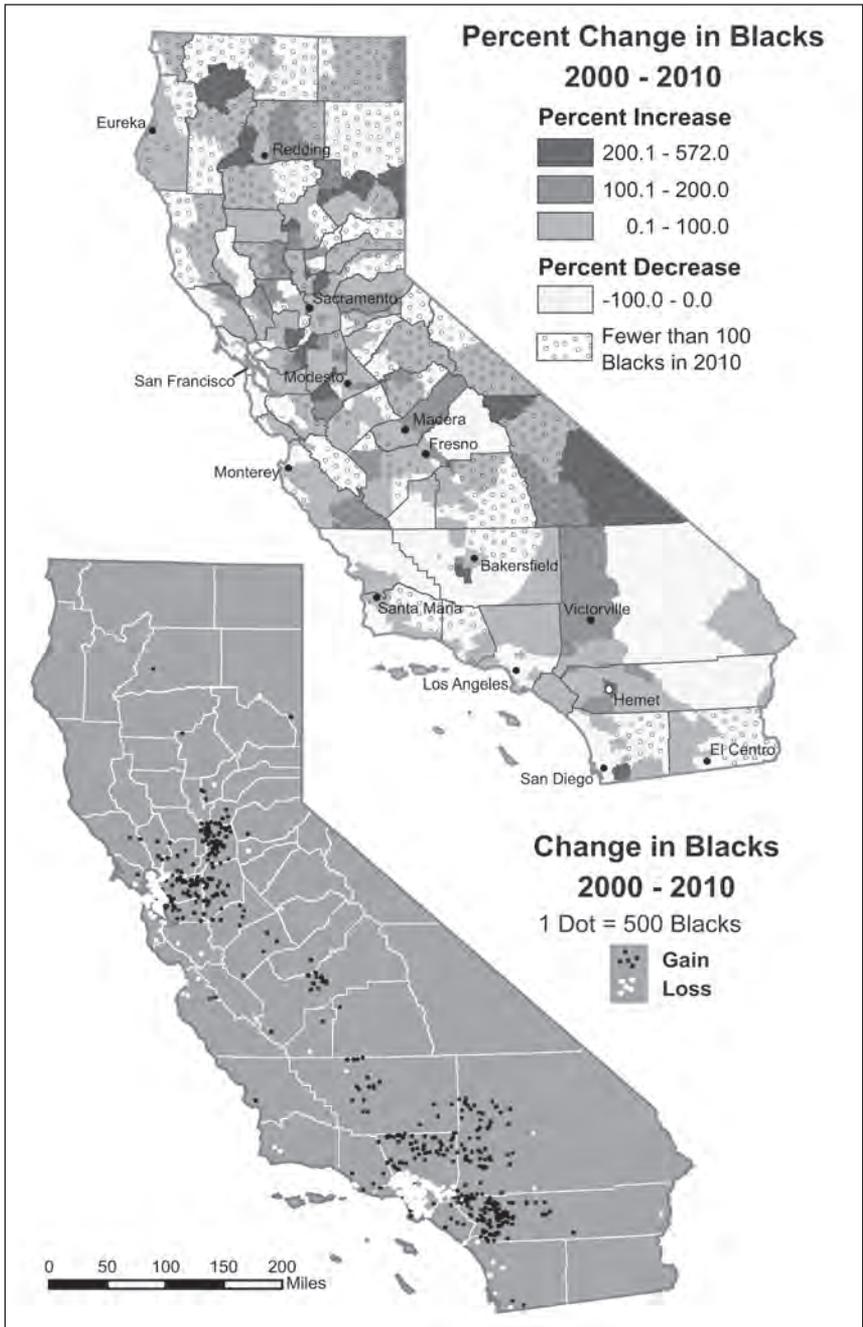


Figure 4.—Black Population Change, 2000–2010.

Los Angeles and Pasadena, San Francisco, and Oakland. It is very clear that Blacks are moving out of older, often poorer central cities that have been the most important historic centers of urban population (Allen and Turner 1997). This decline of Black numbers in Los Angeles and Alameda Counties (Table F) is an important change because these are the two largest centers of Black population in the state. In the Bay Area there are also substantially reduced numbers of Blacks in San Francisco and adjacent San Mateo County. Some of these losses probably represent net migration out of the state, but we suspect that most Blacks who left these counties moved to suburbs and more distant places, as we already discussed.

If Los Angeles County is an example, Black departures from former ghettos opened up housing for the growing Mexican and Central American populations (Allen and Turner 2002). Some Black renters who could afford to move out of such poor areas to better neighborhoods have left, while Black homeowners have often been able to sell to Hispanics who are forming their own families and need housing.

This shift to the suburbs, primarily involving middle-class Blacks, was very evident during the 1990–2000 decade (Allen and Turner 2002). Such moves to outlying areas continue the loss of Black political power that had been based on Black geographical concentrations, which originated in the days of ghettos and blatant housing discrimination (Massey and Denton 1993). However, Figure 4 makes it clear that since 2000 the area of Black numerical decrease has now expanded to all of the southern half of Los Angeles County.

To the north of Los Angeles on the dot map is a large gray area that represents the rugged and sparsely populated San Gabriel Mountains, but beyond the mountains and east into San Bernardino County is a vast area in the Mojave Desert where the most-recent suburban expansion from greater Los Angeles has occurred. Black and Hispanic population growth, in places such as Lancaster and Victorville, continued a trend from earlier decades in which the lower housing prices made those areas attractive, despite typically long commutes to work in older cities and suburbs. Similarly, to the south, in Riverside County the most rapid Black increases were in Hemet and nearby areas because of relatively low home prices.

In Northern California, the greatest increases in Black populations occurred in the suburbs, smaller cities, and new residential developments between the San Francisco Bay Area and Sacramento. The

most rapid percentage growth took place in counties where not many Blacks had been living—counties on the outskirts of large population centers (Table E). To the south, Stanislaus County, Fresno, and the Bakersfield area also experienced Black gains.

Apart from declines in the larger, more central cities and older suburbs, Black numbers also decreased in San Mateo, Santa Clara, Monterey, and Santa Barbara Counties, as well as some coastal communities north of San Diego. It is not known why this decrease occurred, but some Blacks may have been priced out of acceptable housing in more-expensive areas. Elsewhere, such as eastward in the Mojave Desert of San Bernardino County, Black losses were probably due to reductions in military personnel at U.S. Army and Marine Corps installations.

Patterns of Change in Hispanics

A pattern of widespread Hispanic increase is found over much of the state, mostly in older cities and towns but also in newer suburban areas (Figure 5). For example, Hispanic growth occurred in the San Joaquin Valley throughout its long-settled eastern side near Route 99 and also northward in the Sacramento Valley to Redding. There were Hispanic increases of over fifty percent in and around Eureka in Humboldt County. Along the Central Coast, in places such as Santa Maria, Hispanic numbers doubled. In other places they tripled, as in some localities in the Delta Region and some Sierra Nevada foothill towns, the latter illustrated by Angel's Camp.

In Southern California, Hispanic numbers grew in all the population centers, not just the larger centers of Los Angeles and San Diego. Hispanic doubled in the large suburban expansion areas around Murrieta and Hemet in Riverside County and Victorville in San Bernardino County. Smaller, less known areas of Hispanic increase include Oxnard and other parts of Ventura County, El Centro in the Imperial Valley, Desert Hot Springs and the Coachella Valley, and Victorville in the Mojave Desert. In Orange County, an absence of dots locates the Santa Ana Mountains that separate the county from the lower-priced housing in the interior.

Places where Hispanics have decreased are not common, and most involve small numbers in rural areas. However, in Los Angeles County, the two small areas identifiable on both maps are the west San Gabriel Valley, including the cities of Monterey Park and Rosemead, and Glendale. In both cases the departure of Hispanics had

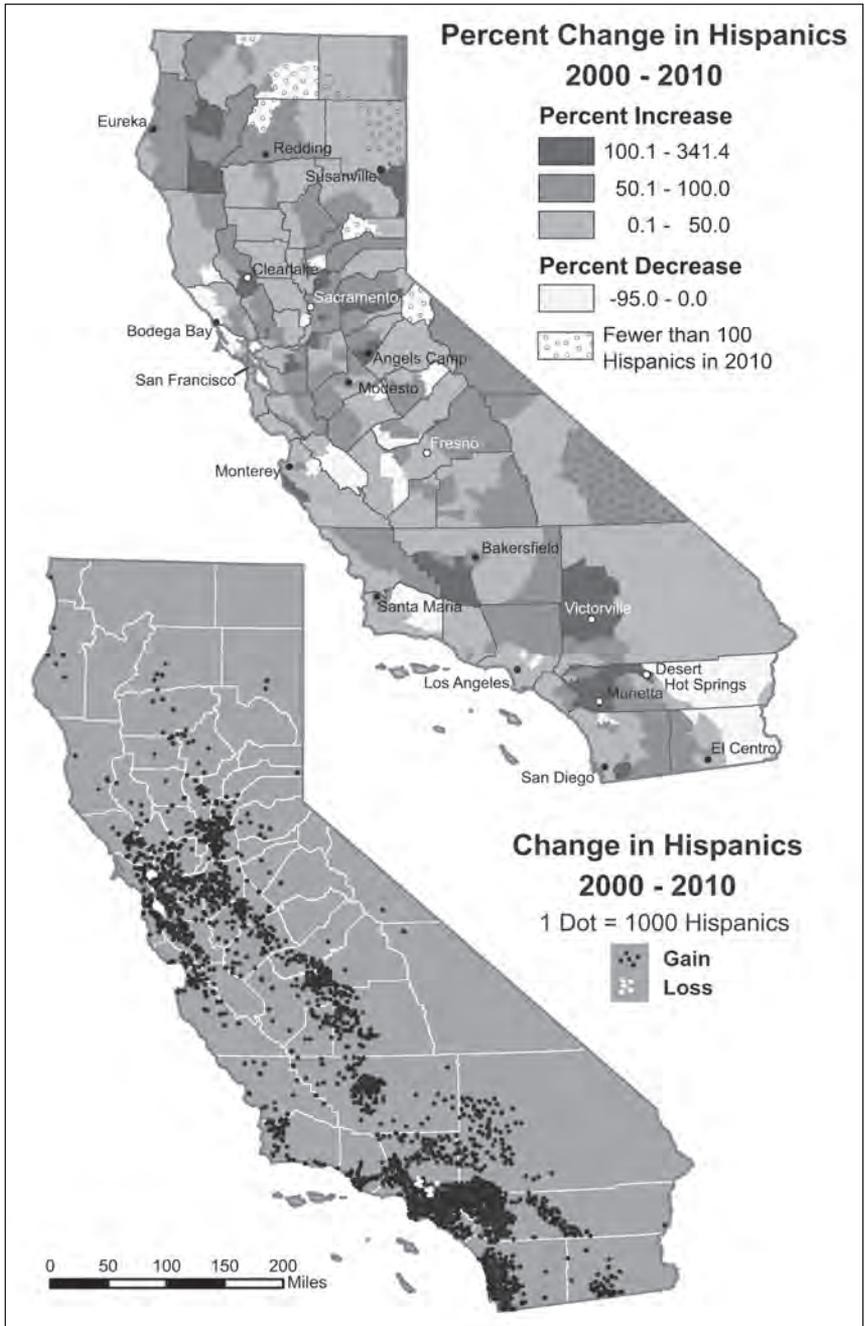


Figure 5.—Hispanic Population Change, 2000–2010.

begun in an earlier decade and was connected with increases in other groups (Allen and Turner 2002). The west San Gabriel Valley has seen the continued growth of that major Chinese settlement, and Glendale has become an enclave for Armenians, continuing to attract them. We do not know the actual processes fueling the loss of Hispanics, but part of the explanation may involve increased housing prices due to the gentrification of older neighborhoods. In Northern California, a small decline in Hispanics occurred near the coasts of Marin and Sonoma Counties, such as in Bodega Bay. Although other factors may have been involved, housing prices in these areas may have increased sufficiently to make them unaffordable for some Hispanics.

Appendix tables can help identify the specific counties of greatest and least growth. Both Placer and Riverside Counties were areas of especially rapid Hispanic growth, with other counties of rapid growth located on the fringe of larger population centers in Northern California (Table G). This is a pattern similar to that observed with Asians and Blacks. On the other hand, Hispanics grew more slowly in Los Angeles and San Francisco and counties adjacent to these major population centers than elsewhere (Table H). This, too, is somewhat similar to the geographical shifts of Blacks, although in these places Black numbers actually declined.

Patterns of Change in Whites

The statewide White population decline is evident in many areas (Figure 6). In Northern California, this was most pronounced around the San Francisco Bay Area, including Sonoma County and around Monterey Bay. This White decline was found in older cities and suburbs such as Bakersfield, Modesto, Stockton, and Sacramento. In Southern California, the large area of decline is focused on Los Angeles, northern Orange County, and San Diego, but it also extended inland to older settled areas in San Bernardino County. White departure from these areas has opened up housing for the other groups, which have shown gains in these areas.

On the other hand, White increases have occurred where there has been much newer housing development, most typically in newer suburbs near the urban fringe. Many such places are evident on the map, such as the city of Santa Clarita, just north of Los Angeles; southern Orange County; western Riverside County in and near Temecula; and in Palm Desert southeast of Palm Springs. An unusual location of White growth was the city of Glendale, where in-moving

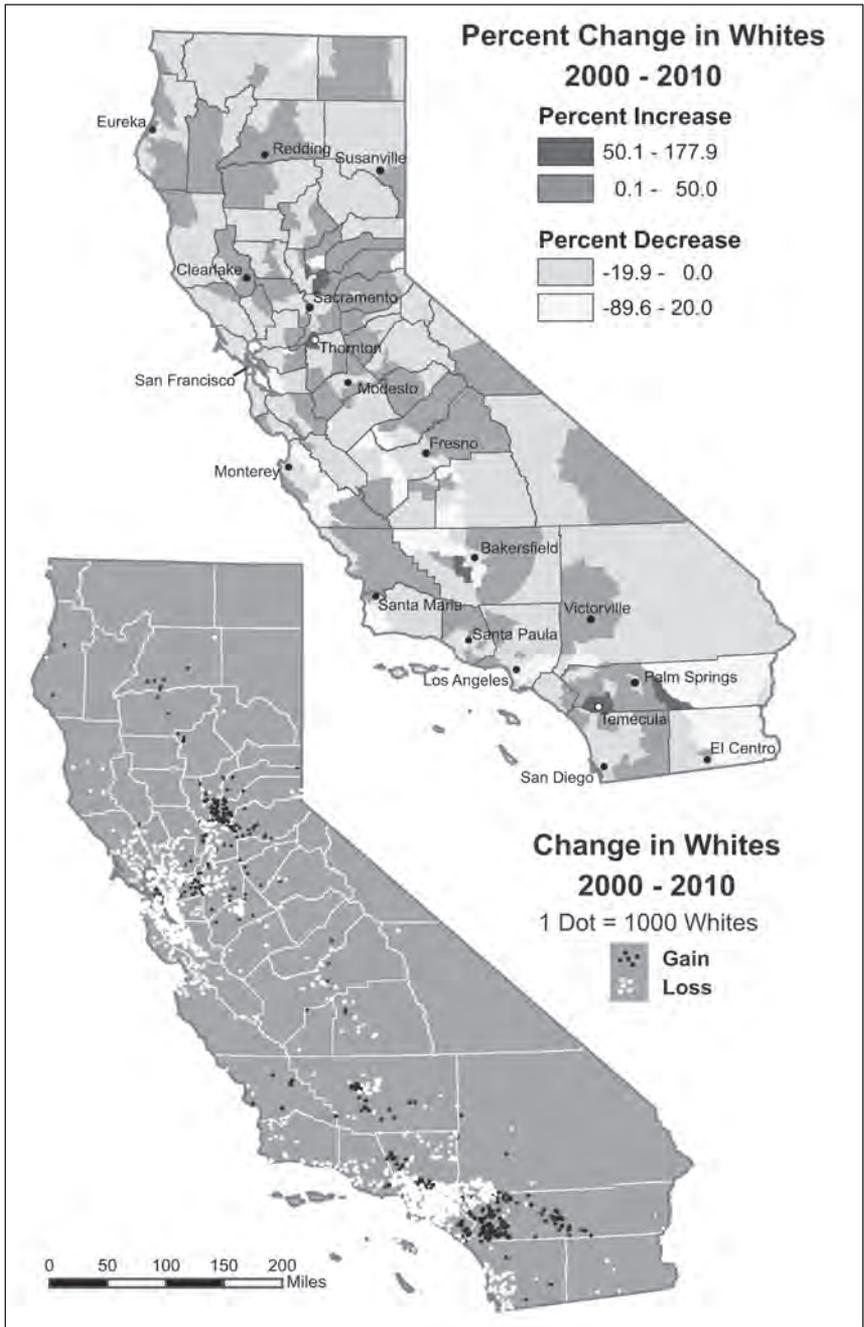


Figure 6.—NonHispanic White Population Change, 2000–2010.

Armenians replaced some Hispanic residents in a gentrified section of that city (Allen and Turner 2002).

Newer residential developments may have prompted the White increases of over fifty percent in an area west of Bakersfield, the section of Placer County closest to Sacramento, and in Thornton in the Delta area. When percentage increases are measured in terms of counties as a whole, Placer, El Dorado, Yuba, and Calaveras—all containing Sierra foothill communities—had the fastest growing White populations outside of Southern California’s Riverside County (Table I). Those Sierra counties benefited substantially, compared to most other counties in the state, from the average higher income levels of their in-migrants compared to those that moved away (Otterstrom, Dixon, and Cosby 2006).

White moves have also taken them well beyond the major population centers, such as to the inland Central Coast town of Paso Robles, where population growth has paralleled the area’s expansion of wine grape acreage (Peters 2007). Whites also increased in numbers in cities like Redding and Chico and in rural areas of the northwestern parts of the state. Migrants to such northern areas tended to come from many different counties in the state as opposed to the migrant origins of suburban areas, whose in-migrants were mostly from nearby counties (Otterstrom, Dixon, and Cosby 2006).

Although this interpretation has emphasized White increases, this is a reminder that Whites were the only group to lose population in the state as a whole. As is evident from the dot map, most of these losses came from large metropolitan areas. Los Angeles County had over 200,000 fewer Whites in 2010 than in 2000, while Orange and Santa Clara Counties each had net losses of over 100,000 Whites. San Francisco, with its special attractions, was the exception, losing less than one percent of its Whites.

Segregation in Neighborhoods

Map patterns of change suggest that all four groups find many similar areas attractive and that the groups’ distributions may be becoming more similar. Could this mean that the groups are coming together residentially, resulting perhaps in greater social interaction between the groups? This question cannot be answered by map patterns at the scale of our study. However, if the area unit by which the distributions are measured is changed to the neighborhood, a partial answer may be obtained.

Scholars have traditionally used indexes of segregation to measure residential separation, the extent to which groups live in different neighborhoods. Neighborhoods have been most commonly measured in terms of census tracts. Index scores are thought to indicate the relative degree of social separateness and neighborhood inequality between the groups. Calculations of the most commonly used indicator, the dissimilarity index, for 2010 compared to 2000 can demonstrate any trends in reduced or increased neighborhood segregation between any two groups. The dissimilarity index, *D*, varies from 0 (no segregation), where each group is represented in all tracts in the same proportion found in the metropolitan area as a whole, to 100 (complete segregation), indicating each group lives in completely different tracts.

Values or scores for the index have recently been calculated for 2010 so that comparisons with scores for 2000 are possible (Population Studies Center 2011). Because the degree to which minorities are segregated from Whites has been of greatest interest to scholars, we present averages of *D* scores for Black-White, Hispanic-White, and Asian-White segregation in California's eleven metropolitan areas with over a half million in total population (Table 2). Together these areas comprise eighty-four percent of the state's total population.

Table 2. Average metropolitan segregation scores (*D*) in 2010 and change 2000–2010.

Race/ethnic groups measured	Average Change in <i>D</i> 2000–2010	Average <i>D</i> 2010
Black-White	-3.0	49.8
Hispanic-White	-1.2	46.5
Asian-White	1.6	43.2

Note: *D* is the index of dissimilarity. Change in *D* is the absolute change, not percentage change.

Source: Population Studies Center 2011.

The degree of segregation between Whites and each of the other groups is moderate and not very different, and the change in segregation over the last decade has been small. As has been true in most of the rest of the U.S., Black-White segregation is higher than segregation between the other groups, but it has been decreasing somewhat more rapidly. This change appears to reflect the increasing income levels of many Blacks as well as an increased acceptance by

Whites. The very small increase in segregation between Asians and Whites probably results from the tendency toward dispersal associated with assimilation being outweighed by the tendency of new immigrants to settle close to friends and relatives. The intermediate level of segregation of Hispanics and Whites indicates more of a balance between these countervailing influences.

The fact that these indicators of neighborhood segregation are moderate and not low reveals that intergroup identities and attitudes remain significant. They should temper any sense from the maps that all four groups are coming together residentially. As has been true in the past, we expect some intergroup tension may occur when a group's numbers increase substantially in a neighborhood.

Conclusion

All these maps have demonstrated a clear geographical shift of all groups from large, older coastal cities and towns to smaller places in the interior of the state. This more-dispersed residential pattern continues trends of suburbanization and sprawl begun decades earlier. In Southern California Riverside County was the single-largest focus of growth for all four groups, and in Northern California we identified the area between the Bay Area, Modesto, and northeast Sacramento as a major growth area, especially for minority groups. There and elsewhere, new groups are coming into areas that have been traditionally White. In this way, differences in ethnic geography seem to be diminishing, at least in terms of the scale of census county divisions. At the neighborhood scale, however, changes in residential segregation between Whites and the other groups over the past decade have been very small.

Places of rapid growth, epitomized by Riverside and Placer Counties, will gain in greater political representation with the new electoral districts created on the basis of the 2010 census (Mehta 2011). These patterns suggest to us that Los Angeles and other large, older coastal cities that have traditionally had separate concentrations of White, Black, Hispanic, and Asian cultures and political power will be slowly challenged by the suburban and less-urbanized counties that have recently received populations of several different race groups. More and more the state is becoming mixed geographically, and the massive metropolitan areas of the coast that have dominated perceptions of the state must begin to recede in the face of population shifts into the smaller, more mixed places we identified on our maps.

We believe that the detail on our maps enabled us to describe better the geography of population change across the entire state than if whole counties had been used. This was because we used census county divisions (CCDs) as the areal unit for mapping. We urge geographers and others to consider using census county divisions as their areal unit for mapping California or major sections of the state on a single map.

References

- Allen, J. P., and E. Turner. 2009. Ethnic Residential Concentrations with Above-Average Incomes. *Urban Geography* 30 (3):209–238.
- . 2007. Migrants between California and Other States. *The California Geographer* 47:1–26.
- . 2002. *Changing Faces, Changing Places: Mapping Southern Californians*. Northridge, CA: Center for Geographical Studies, California State University, Northridge.
- . 1997. *The Ethnic Quilt: Population Diversity in Southern California*. Northridge, CA: The Center for Geographical Studies, California State University, Northridge. <http://www.csun.edu/~hfgeg005/eturner/EthnicQuiltIndex.html>
- . 1996. Spatial Patterns of Immigrant Assimilation. *The Professional Geographer* 48 (2):140–155.
- California Department of Finance. 2010a. *California County Population Estimates and Components of Change by Year—July 1, 2000–2010*. Report E-2. www.dof.ca.gov/research/demographic/reports/estimates/e-2
- . 2010b. *California County Race/Ethnic Estimates and Components of Change by Year, July 1, 2000–2008*. Report E-3. http://www.dof.ca.gov/research/demographic/reports/estimates/e-3/by_year_2000-08
- . 2011. Maps for California Counties. http://www.dof.ca.gov/research/demographic/state_census_data_center/census_2010/view.php
- Datel, R., and D. Dingemans. 2008. Immigrant Space and Place in Suburban Sacramento. In *Twenty-First-Century Gateways: Immigrant Incorporation in Suburban America*, A. Singer, S. W. Hardwick, and C. R. Brettell, eds., 171–199. Washington, D.C.: Brookings Institution Press.
- Ennis, S. R., M. Rios-Vargas, and N. G. Albert. 2011. *The Hispanic Population: 2010*. C2010BR-04. Washington, D.C.: U.S. Census Bureau.

- Hill, L. E., and H. P. Johnson. 2011. *Unauthorized Immigrants in California: Estimates for Counties*. San Francisco: Public Policy Institute of California. <http://www.ppic.org/main/publication.asp?i=986>
- Ihrke, D. K., C. S. Faber, and W. K. Koerber. 2011. *Geographical Mobility: 2008 to 2009*. Current Population Reports, P20-565. Washington, D.C.: U.S. Census Bureau. www.census.gov/prod/2011pubs/p20-565.pdf
- Johnson, H. P., and J. M. Hayes. 2004. *The Central Valley at a Crossroads: Migration and Its Implications*. San Francisco: Public Policy Institute of California.
- Kaplan, D., J. Wheeler, and S. Holloway. 2009. *Urban Geography*. Hoboken, NJ: John Wiley & Sons.
- Kotkin, J., and W. H. Frey. 2007. *The Third California: The Golden State's New Frontier*. Research Brief. Washington, D.C.: The Brookings Institution.
- Li, W. 1998. Anatomy of a New Ethnic Settlement: the Chinese *Ethnoburb* in Los Angeles. *Urban Studies* 35 (3):479–501.
- Li, W., and J. W. Park. 2006. Asian Americans in Silicon Valley: High-Technology Industry Development and Community Transformation. In *From Urban Enclave to Ethnic Suburb: New Asian Communities in Pacific Rim Countries*, W. Li, ed., 119–133. Honolulu: University of Hawaii Press.
- Mehta, S. 2011. Census May Shift Political Power in California to Minorities and the Interior. *Los Angeles Times*, March 9.
- Massey, D. S. 1985. Ethnic Residential Segregation: A Theoretical and Empirical Review. *Sociology and Social Research* 69:315–350.
- Massey, D. S., and N. Denton. 1993. *American Apartheid: Segregation and the Making of the Underclass*. Cambridge, MA: Harvard University Press.
- Otterstrom, S. M., S. Dixon, and K. L. Cosby. 2006. Income Change Due to Migration in California, 1995–2001. *The California Geographer* 46:32–56.
- Passel, J. S., and D'V. Cohn. 2011. *Unauthorized Immigrant Population: National and State Trends, 2010*. Washington, D.C.: Pew Hispanic Center. <http://pewhispanic.org/reports/report.php?ReportID=133>
- Peters, G. 2007. The Changing Cultural Landscape of El Paso de Robles. *Yearbook of the Association of Pacific Coast Geographers* 69:74–87.
- Population Studies Center. 2011. *New Racial Segregation Measures for Large Metropolitan Areas: Analysis of the 1990-2010 Decennial*

- Censuses. University of Michigan. www.psc.isr.umich.edu/dis/census/segregation2010.html
- Turner, E., and J. P. Allen. 2010. Issues in Depicting Population Change with Dot Maps. *Cartography and Geographic Information Science* 37 (3):189–197.
- U.S. Census Bureau. 2001. *Census 2000, Summary File 1*. Washington, D.C.: U.S. Census Bureau. www.census.gov/census2000/sumfile1.html
- . 2002. *Demographic Trends in the 20th Century: Census 2000 Special Reports CENSR-4*. Washington, D.C.: U.S. Census Bureau.
- . 2005. *Notes and Errata: 2000 Census of Population and Housing*. SF/01-ER. Available at <http://2010.census.gov/2010census/about/cqr.php>
- . 2003. Geographic Terms and Concepts, Appendix A. *Selected Appendixes: 2000. Selected Social, Economic, and Housing Characteristics. PHC-2-A*. Washington, D.C.: U.S. Census Bureau.
- . 2010. *2010 Census Redistricting Data (Public Law 94-171)*. Washington, D.C.: U.S. Census Bureau. www.census.gov/prod/cen2010/doc/pl94-171.pdf
- . 2011. Summary File 1, 2010 Census Data. Washington, D.C.: U.S. Census Bureau. <http://2010.census.gov/2010census/data/>

Appendix

These tables show the five counties that had the largest and smallest percentage increases or largest percentage decreases for the total and the race/ethnic populations 2000–2010. Counties with fewer than 1,000 members of a group in 2010 are not included in tables for that group.

Table A. Counties with largest percentage increase in total population, 2000–2010.

County	Percent change	Total population 2010
Riverside	41.7	2,189,641
Placer	40.3	348,342
Kern	26.9	839,631
Imperial	22.6	174,528
Madera	22.5	150,865

Table B. Counties with decrease or smallest percentage increase in total population, 2000–2010.

County	Percent change	Total population 2010
Tuolumne	1.6	55,365
Siskiyou	1.4	44,900
Alpine	-2.7	1,175
Plumas	-3.9	20,007
Sierra	-8.9	3,240

Table C. Asian greatest percentage increase counties, 2000–2010.

County	Percent change	Asian population 2010
Placer	179.3	20,435
Napa	149.7	9,223
Riverside	129.1	130,468
El Dorado	89.2	6,297
Madera	78.9	2,802

Table D. Asian smallest percentage increase counties, 2000–2010.

County	Percent change	Asian population 2010
San Benito	13.0	1,443
San Francisco	11.8	267,915
Yuba	7.6	4,862
Monterey	4.2	25,258
Imperial	0.2	2,843

Table E. Black greatest percentage increase counties, 2000–2010.

County	Percent change	Black population 2010
Placer	133.9	4,751
El Dorado	73.3	1,409
Napa	62.2	2,668
Yolo	52.1	5,208
Riverside	45.8	140,543

Table F. Black greatest percentage decrease counties, 2000–2010

County	Percent change	Black population 2010
Los Angeles	-8.0	856,874
Alameda	-11.7	190,451
Monterey	-15.0	12,785
San Mateo	-17.7	20,436
San Francisco	-19.2	48,870

Table G. Hispanic greatest percentage increase counties, 2000-2010

County	Percent change	Hispanic population 2010
Placer	86.1	44,710
Riverside	77.9	995,257
Yuba	72.8	18,051
Calaveras	70.1	4,703
Lake	67.0	11,088

Table H. Hispanic smallest percentage increase counties, 2000–2010.

County	Percent change	Hispanic population 2010
Santa Clara	18.8	75,809
San Mateo	18.0	27,794
Orange	15.7	137,394
San Francisco	11.2	12,270
Los Angeles	10.5	445,676

Table I. NonHispanic White greatest percentage increase counties, 2000–2010.

County	Percent change	White population 2010
Placer	28.0	265,294
Riverside	10.2	869,068
El Dorado	9.0	144,689
Yuba	7.9	42,416
Calaveras	7.4	38,074

Table J. NonHispanic White greatest percentage decrease counties, 2000–2010.

County	Percent change	White population 2010
San Benito	-13.7	21,154
San Mateo	-13.8	303,609
Santa Clara	-15.8	629,909
Monterey	-15.8	136,435
Imperial	-16.8	23,927

The New Blue Islands: Azorean Immigration, Settlement, and Cultural Landscapes in California's San Joaquin Valley

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Abstract

We examine the settlement patterns, immigrant networks, and cultural landscapes of one of the most unique migrations in California, Azoreans who relocated to the San Joaquin Valley. Like many settler groups, Azoreans that moved to California brought along customs and traditions associated with their homeland and adapted these practices to new environments. Azoreans were first drawn to California by the whaling industry and the Gold Rush, but soon settled in California's San Joaquin Valley to engage in agriculture. During the early twentieth century, the rural communities of the San Joaquin Valley emerged as important destinations for subsequent waves of Azorean immigrants. Today, the San Joaquin Valley supports a vibrant Cal-Azorean landscape. Moreover, frequent travel between valley communities and the Azores connects immigrants to family and community in the homeland. This transnational connection maintains ethno-heritage ties and immigrant networks that continue to shape the cultural landscapes of both California and the Azores.

Introduction

CALIFORNIA HAS LONG SERVED as a destination and permanent home to people from all corners of the world, and the state's vibrant communities represent many cultures. We explore Portuguese migration to California, with a specific focus on the emigration from the Azores to California's San Joaquin Valley. Our research investigates the contemporary patterns and flows of the Azorean Diaspora in a regional California setting and proposes the emergence of a California-Azorean landscape. At present, the U.S. Census indicates that 276,683 Californians claim Portuguese ancestry and that nine of the state's fifty-eight counties show at least five percent of the population

asserting Portuguese ancestry. While these numbers may not seem large against the backdrop of recent immigration to the state, they are significant when one learns that the majority of Portuguese settlers came to California in the early decades of the 1900s and were later reinforced by subsequent migrations in the 1960s.

The Azores is an island archipelago of nine distinct islands that lies approximately seven hundred miles west of Portugal. At first glance, it might seem an unlikely place for a population exodus to California. Azoreans faced many hardships that led to emigration from their homeland, including high birthrates, lack of available land for farming, and economic adversity stemming from a decline in prices for exported goods. Additionally, emigration was spurred by natural disasters on several islands and by young males throughout the Azores who departed to evade military conscription (Nunes and Ferreira 2011, 48–52; Williams 1982, 65).

The spatial patterning of Portuguese immigrants is unique among European settler groups in California. Earlier studies of the Portuguese in California indicate that they prefer to settle in rural areas. They were also reluctant to join other national origin groups by relocating to the state's growing cities. In fact, the Portuguese preference to live on rural farms was four times that of other national origin groups in 1930, and six times greater in 1960 (Graves 1977, xv).

We employ a variety of methods to investigate Azorean migration and settlement with archival and census materials, field investigation, landscape analysis, and participant observation providing the bulk of data. We participated in a variety of social gatherings and cultural activities, and we met local church and Portuguese community leaders. The information obtained from these sources provides a contemporary view of immigrant sources and destinations, allowed us to observe the engagement of migrants in the community, and supported our subsequent research activities in the Azores. Our Azorean research benefitted extensively from personal conversations with California-Azorean community leaders, who provided invaluable information and logistical support during our visit to immigrant sending communities on the Azorean islands of São Jorge and Terceira.

Migration Flows, Settlement Destinations, and Immigrant Networks

Portuguese first came to the United States in the 1820s. The primary focus of migration was southern New England and California, where mainly Azorean immigrants were hired as crew members on whaling ships. Traditionally, Azoreans were not a seafaring culture; however, they were in demand by whaling companies because they could be hired for lower wages than domestic laborers. Because of their participation in shore whaling, Azoreans were privy to news of the discovery of gold in California and, not surprisingly, they can be counted among the state's earliest gold-seekers. With the demise of the whaling industry, immigrants were redirected into the fishing and shipping trades in Boston. A second wave of migration coincides with the late 1800s. Azorean immigrants were eventually drawn to the textile mills of New England, which helped to solidify earlier immigration destinations, and a new immigrant stream made its way to Hawaii working as laborers in the sugar plantations (Williams 1982, Santos 1995).

California Beckons

Like many of California's newcomers, Azoreans were drawn from their island archipelago to the gold fields of the Sierra Nevada. In California, the post-gold rush economy drew many immigrants, including Azoreans, to new areas of the state. Resource-led development including timber harvesting, fishing, and agriculture opened up and directed new settlement in the state. Throughout this period, Azoreans relied on the established migration routes and settlement patterns of their predecessors. Over time, distinctive immigrant social networks were created that would provide similar pathways to later arrivals. Until 1900, Azorean settlement was primarily focused in the East Bay counties of Alameda, Contra Costa, Santa Clara, and, to a lesser extent, San Francisco and Marin Counties. Taken together, this five-county Bay Area region accounted for fifty-five percent of all foreign-born Portuguese in the state in 1900. During the first two decades of the twentieth century, the California Portuguese population doubled, numbering 33,025 in 1920. During this period, Alameda County represented a main destination for new arrivals, and specific Azorean immigrant communities could be found in Humboldt, Monterey, and San Luis Obispo counties. By the early 1900s, truck farming and dairying emerged as key industries in the state, and Azoreans gravitated to Sonoma, Alameda, and Stanislaus counties (Graves 1977, Williams 1982).

New Blue Islands: Emergence of an Ethnic Archipelago in the San Joaquin Valley

The early 1900s also witnessed the emergence of new destinations as Portuguese settlement began to shift away from the coast to the state's San Joaquin Valley. New arrivals were initially drawn to the region because of the opportunity to engage in ranching. In particular sheepherding, an often forgotten occupation in California, provided an early path to social mobility for Azorean immigrants. According to Donald Warrin, sheepmen like Enos and John Gomes, Azorean immigrants from Fajã dos Vimes, São Jorge Island, engaged in the age-old practice of transhumance. During the winter months, they kept their sheep flocks in the San Joaquin's warm inland valleys and then drove them into the mountains for the summer season (Warrin 1997/1998).

Portuguese were relatively unique in their preference for settling in rural locations in California. According to an early study of the Portuguese in California, over fifty-four percent lived in rural areas and farms. A typical settler would work as a day laborer until he earned enough to buy land for cash. Women and children typically supported the family by raising small livestock and tending to a kitchen garden. By 1920, only foreign-born Italians and Germans owned more California farms than the Portuguese, who owned 3,440 farms totaling nearly 438,000 acres (Brown 1944, Baganha 1995).

A detailed analysis of the pioneering efforts of Azoreans in the San Joaquin Valley found that immigrants generally entered the workforce as milkers and shepherds in the region's emerging dairy industry. Azoreans in particular depended on livestock in their island homelands. Dairy work did not require skilled knowledge of machinery, and immigrants with little or no English could manage quite well in a dairy economy. Moreover, dairying was a family affair, utilizing the labor of the entire family and newly arrived cousins and relatives. The growth of dairying was also aided by a precipitous decline in California's wool industry that had initially drawn and employed a large number of Portuguese sheep herders in the southern San Joaquin Valley. As a result, many displaced sheep herders turned to dairying. By the 1930s, word about the success of Azorean dairying had spread throughout the immigrant community, and within three decades the Portuguese had achieved a numerical majority in the dairy industry. The Portuguese imprint in agriculture is apparent today as evidenced by one study that found two-thirds of

dairy farmers in Merced, Kings, and Tulare Counties had Portuguese surnames (Graves 1977, Warrin 1997/1998).

After 1920, anti-immigration laws led to a decline in Portuguese migration to the United States and California. By the late 1950s, a third wave of emigration from the Azores was underway. The (1957–1958) eruption of Capelinhos on the island of Faial prompted changes in U.S. immigration policy. It resulted in the Azorean Refugee Acts of 1958 and 1960 to assist Azoreans impacted by the volcanic eruption. Refugees from Faial who were directly impacted by the natural disaster, as well as other Azorean citizens, benefited from this temporary legislation and made their way to United States. Subsequent natural disasters, including the 1964 and the 1980 earthquakes on São Jorge Island and the island of Terceira, respectively, led to additional immigration reform, including the elimination of the national origins quota and increased support for family reunification. The numbers of Portuguese immigrants increased substantially during this period, with more than 150,000 coming to the United States between 1961 and 1977, representing thirty-five percent of the total Portuguese immigration to the country since 1982 (Williams 1982, 96). Population geographers James Allen and Eugene Turner estimate that twenty percent of this number relocated to California, and that nearly thirty percent of all the Portuguese ancestry group live in California (1988, 120).

Throughout the various Azorean migration flows to California, migrants followed the well-worn paths of their predecessors to form spatially concentrated settlements in the San Joaquin Valley that mirror their island of origin. Before 1900, most migrants hailed from the islands of Pico, São Jorge, and Terceira. The majority of migrants from the island of Terceira settled in Kings, Tulare, Stanislaus, San Joaquin, and western Merced Counties. By contrast, migrants from the island of São Jorge predominated in the eastern portion of Merced County, while those from Pico concentrated in the Hanford area of Kings County (Graves 1977). Later migration flows reinforced the spatial patterning of these “new blue islands” in the San Joaquin Valley (Figure 1). This geographical expression is also largely responsible for the deeply rooted migration networks that presently exist between the Azores and California. Moreover, such island-centric migration chains reinforce the intensity of these networks and immigrant communities in California that ultimately influence the Azorean cultural traditions in the San Joaquin Valley. Azorean-California networks are intense and persist due to the nature

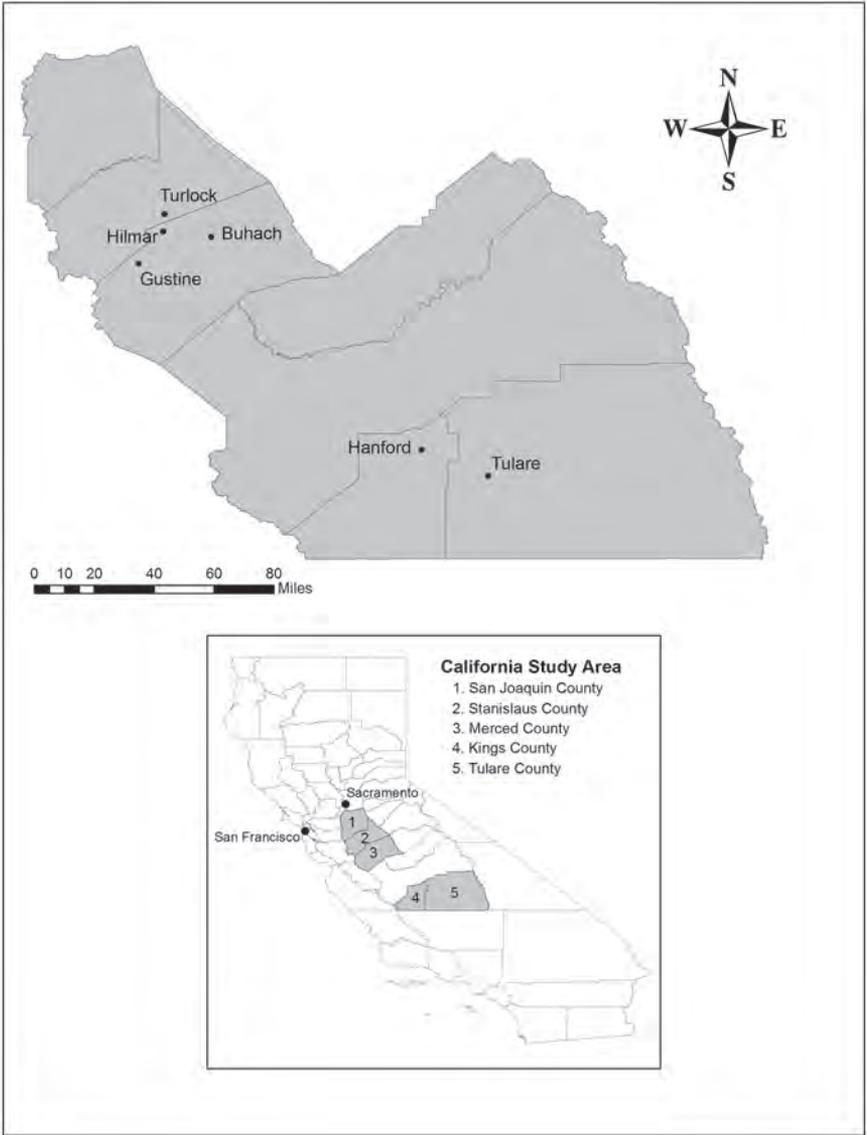


Figure 1.—Locations of the “new blue islands” in California’s San Joaquin Valley.

of “islandness” in both the migrants’ homeland and within their California communities, where in both cases they are isolated from very few competing networks. A number of studies have reached similar conclusions about the level of “intensity to kinship networks” in an island setting (Williams and Fonseca 1999). This intensity

is apparent in diverse settings among virtually all first-generation immigrants who are known by, or often will know, those living in their home island. During our visit to both Terceira and São Jorge, we witnessed this phenomenon in virtually every social interaction. The immigrant-kinship network was particularly acute during travel to the Azores, when immigrants and their families first meet upon departure to the Azores. During the summer months, hundreds of Azorean-Californians board a weekly direct flight from Oakland International to Terceira's Lajes Airport. The temporary reunification afforded during the flight and throughout the summer months at numerous religious and cultural festivals reinvigorates migrant networks. This deepening of social relations and institutions over time is reinforced through family reunification and the interdependency of immigrant communities. Networks are further intensified in particular island communities through property transfer, income remittances, and periodic return visits to Azorean homelands. It is also clearly represented in the shaping of Cal-Azorean cultural landscapes in the migrant communities of the San Joaquin Valley.

Emergence of the Cal-Azorean Landscape

Carol Ann Gregory's detailed analysis of Portuguese landscapes in California rightly argues that the most authentic cultural landscapes are found in the rural areas of the state and include Portuguese halls, churches, and dairies (2004, 167–171). Our findings extend her work to suggest that *Cal-Azorean* landscapes best describe the distinctive cultural imprint in the San Joaquin Valley and that these expressions represent a unique blend of social relations and migrants networks that stem from the phenomenon of *islandness* in both their Azorean homelands and in their California settler communities. We present four unique Azorean ethnic landscapes including homescapes, *festas*, bullrings, and cultural institutions to illustrate the Cal-Azorean landscape typology in the San Joaquin Valley.

Azorean Homescapes

Like many cultures, Azoreans have incorporated features into the landscape of their homes that connect them to their emigrant homeland. There are several characteristics that distinguish California's Azorean homescapes from non-Azorean residences. Common features of an Azorean home include the use of hydrangeas, religious symbols (religious tile murals and statues of saints), and decorative volcanic rocks.

Hydrangeas are found throughout the Azores islands and are an important symbol that ties migrants to their homeland. The acidity of the soil in the Azores makes the hydrangeas a vivid blue color, and they provide colorful borders and fences, particularly on São Jorge Island. In the San Joaquin Valley, hydrangeas are often found in the front yards of Azorean migrants and depictions of the flower appear on household items and likewise adorn floats, oxen carts, and paintings (Figure 2).



Figure 2.—Float decorated with hydrangeas to represent São Jorge Island, Bode de Leite, Our Lady of Assumption Festa, Turlock, CA, September 2011.

Another common feature in the landscape of an Azorean home is the use of decorative volcanic rock. This landscape type is most common among older migrants, who use volcanic rock in their front yards, sidewalks, and residential walls. Homes in the Azores that have a front yard will also incorporate volcanic rocks into the landscape (Figure 3).



Figure 3.—Use of volcanic rock in this contrasting black-and-white pattern is common throughout the Island of São Jorge. Azorean migrants in California often use volcanic rock to decorate their yards.

An ethno-religious symbol commonly found throughout the Azores and replicated in the San Joaquin Valley is religious tile murals, located on the front exterior wall of a home. A survey of Azorean residences in the Merced County town of Hilmar, population 5,200, found a total of sixty-two homes with religious tile murals, with some homes featuring more than one tile. In Hilmar, the religious tile murals show the devotion Azoreans have to their religion and their culture. Similar to the use of decorative volcanic rock, religious tile murals are most closely associated with the homes of first-generation Azoreans who came from the islands. Moreover, the field survey found that relatively new homes in Hilmar lacked tile murals. The tiles that are found on homes in the San Joaquin Valley are purchased from the Azores. In the Azores, religious tile murals are found on a majority of the homes, with owners selecting

an image of the saint that represents their town or that symbolizes their particular island. Figure 4 shows an example of a religious tile mural in Hilmar (left side) and one in São Miguel Island (right side). As the island's namesake, the St. Michael tile found on a home in São Miguel is especially common.



Figure 4.—Left side, a religious tile mural found in Hilmar. Right side, a religious tile mural found on São Miguel Island Azores.

Festas (Festivals)

Every Sunday from May through October, it is common to come across a group of people walking through small towns in the San Joaquin Valley either dressed in traditional Azorean clothing, carrying statues of saints, or marching in a band. The gathering and associated celebrations represent one of the most important festivals in Azorean-Portuguese culture in the region and throughout the state, the Holy Spirit *Festa*. The Holy Spirit has played a vital role in the Portuguese culture, and its origins can be traced back to the time of Queen Isabel in the early 1300s. Queen Isabel was known for taking bread from her own table and giving it to the poor. One day, her husband, King Diniz of Portugal, asked her to show him what she was hiding. When she opened up her cloak, roses fell out instead of bread (Azevedo 1990). Figure 5 shows a statue of St. Isabel

that is used in Holy Spirit *festas*. When the feast for the Holy Spirit first started in Portugal a meal was given and the poorest person at the feast was deemed to be king of the feast and wore a crown.



Figure 5.—Statue of St. Isabel at the Our Lady of Miracles Festa, Gustine. Photo by E. Machado.

The *feira* was very popular among Portuguese and was introduced to the Azores upon their settlement of the islands. Likewise, the Azorean immigrants who settled in California brought along the *feira* tradition to the San Joaquin Valley. In the San Joaquin Valley, the first Holy Ghost *feira* was held in Buhach in 1900 (Goulart 2003). Currently, a total of thirty-one Holy Spirit *festas* regularly take place in the San Joaquin Valley. *Festas* are initially started by groups of Azoreans in a community that share an interest in celebrating and

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continuing their Azorean ethno-religious identity and traditions. In honor of Queen Isabel, the tradition of giving bread to the poor is still practiced in California. Every Holy Spirit *feira* has a feast of *sopas* (bread, meat, and cabbage) that is free to the public, and it is estimated that more than 200,000 free meals are served by Azorean volunteer-based organizations every year (Goulart 2003).

One of the most popular *feiras* in the San Joaquin Valley is Our Lady of Miracles (OLM) in Gustine. The brainchild of the Portuguese-American Club, the OLM festival was initiated in 1932 and was known as the *Festa da Serreta* because it was closely patterned after the festival honoring *Nossa Senhora do Milagres* in the village of Serreta, Terceira Island (Gayton 1948). The festival's founder, Manuel B. Sousa, a resident of Gustine, was inspired to recreate the Serreta festival after witnessing the original celebration during a visit to the Azores. The *feira* recently celebrated its seventy-fifth anniversary (September 2011), and every year it draws Azoreans from all over the state (Figure 6). This year's celebration included sixty-four Portuguese queens and queens from past *feiras* to commemorate the anniversary (OLM website). The *feira* has played an important role in connecting Gustine to the Azores and strengthening the social relations between the island of Terceira and the San Joaquin Valley, as evidenced by the 2002 agreement to authorize sister-city status between Gustine and the work heritage site of the city of Angra, Terceira Island.



Figure 6.—The procession of Portuguese queens, Our Lady of Miracles Festa in Gustine 2010.

Festas in Gustine and Serreta create ethno-religious linkages among migrants and provide a shared identity with communities in the Azores. We were fortunate to attend *festas* in both Gustine and in Serreta and see how the celebrations share important similarities and differences. Both *festas* draw participants from outside the local community. In the Azores, thousands of devotees from all over Terceira Island participate in the religious celebration, with many choosing to walk in the form of a modern-day pilgrimage to Serreta. Portuguese “queens,” who represent St. Isabel by carrying the Holy Spirit crown, are a prominent feature of Gustine’s *feira*, as well as all California festivals, but they do not exist in the Azores. When *festas* first started in California, they were similar to those in the Azores; however, by the early 1900s, queens rather than kings would wear the full regalia (cape, gown, and crown) during the processionals.

Another common feature that is associated with the Holy Spirit festa is *imperios* (chapels) located on the property of the Portuguese organization that holds the event. *Imperios* are found in nearly every small village throughout the Azores. In the past, *imperios* would be the place where food would be stored to feed the poor. Now, both in the Azores and in the San Joaquin Valley, *imperios* are used to store the Holy Spirit crown. Two types of *imperios* are common in the San Joaquin Valley. One finds both the traditional, decorative type found in the Azores (Figure 7) and others are designed to blend in with other structures located on the property.



Figure 7.—Turlock Pentecost Association imperio compared to a typical imperio on the island of Terceira.

Bloodless Bullfights

Another tradition that has been carried from Portugal to the Azores and now to California is the Portuguese bullfight. During most of the week, the eight bullfighting rings in the San Joaquin Valley are deserted and seemingly abandoned; however, on Monday nights during the *feira* season these arenas fill to capacity with bullfighting fans and aficionados. The largest bullfighting ring, with a capacity of 3,500 people, is located in the town of Stevinson (Merced County). Bloodless bullfights are unique to the California ethnic landscape in that they are allowed to occur because of their association with a religious celebration. In the Azores, there are two types of bullfights—those held in a ring (*tourada da praça*), and those held in a street (*tourada à corda*). In a *tourada à corda*, literally “bulls on a rope,” the bull is tied to a rope that is held by five skilled handlers while the bull runs through a blocked-off street. The *tourada à corda* is uncommon in California but can be found in Gustine and the city of Tulare; however, it is quite common on the island of Terceira during the summer months, with nearly every village on the island holding a bullfight event (Figure 8).



Figure 8.—A *tourada à corda*, Altares, Terceira Island, September 2011.

Azorean Cultural Institutions

Cultural institutions such as the *Casa dos Açores* in Hilmar serve as a focal point for Azoreans living in the San Joaquin Valley. It offers services and activities to a wide range of community members, including English-language classes for Azorean immigrants, Portuguese language classes for youth, viola (Portuguese guitar) lessons, and instruction in traditional folklore dancing. The organization also acts as a social venue for Azoreans in the community who want to watch Portuguese soccer games, play Portuguese card games, or simply to socialize. The facility was founded in 1977 with the intention of helping the Azorean community preserve its heritage and to promote Portuguese cultural activities. Situated near the junction of Highways 165 and 99, *Casa dos Açores* is a large, bright blue building that is not easily missed in the small town Hilmar (Figure 9). It is centrally located among a high concentration of Azorean residents, and it is also easily accessible to Azoreans from neighboring communities such as Gustine and Turlock.



Figure 9.—*Casa dos Açores* located in Hilmar, California. Photo by E. Machado.

The San Joaquin Valley has one Portuguese National Church, Our Lady of the Assumption (OLA) Catholic Church, located in Turlock (Figure 10). The Church is located on the rural outskirts of Turlock and is a commanding presence among the agricultural fields that surround the facility. The Church grounds are imprinted with various Azorean-Portuguese cultural symbols, including Ave Maria arches that frame the walkways, windows featuring Portuguese navigational crosses, navigational crosses embedded in the stone sidewalks, Helzer and Machado: The New Blue Islands

religious tile murals, and directional signs in both English and Portuguese. Like *Casa dos Açores*, OLA provides many services to the Portuguese community. The Church organizes its own *feira*, supports a Portuguese Cultural Center, provides social services (VALER) to help community members become United States citizens, and runs one of two Portuguese language schools in the San Joaquin Valley.



Figure 10.—Our Lady of the Assumption Catholic Church, Turlock.

The establishment of Portuguese-language schools and classes offered at public schools is key to the future maintenance of Portuguese-Azorean cultural in the region. In Hilmar, the elementary school offers a Portuguese enrichment program, and Hilmar High School offers Portuguese language classes. Jorge de Sena Portuguese School is held every Monday at Our Lady of Assumption Church in Turlock. The school offers a K–8 curriculum to a total of 100 students. A second school, the Portuguese Language Academy in Hilmar, is part of the STARTALK program, a project of the National Foreign Language Center and federally funded by the National Security Language Initiative. The four-week summer immersion is offered to fourth- through twelfth-grade students of Portuguese descent. In addition to language and writing classes, students are exposed to a wide variety of cultural traditions and events in their communities,

including visits to Portuguese bakeries and restaurants, listening to the traditional Portuguese music genre known as the *fado*, visits to a bullfight arena, and participation in a traditional Azorean *feira*.

Conclusion

The findings of this research extend our knowledge of the dynamic processes of Azorean migration, settlement, and cultural landscape change in California's San Joaquin Valley. Our field work in both California and the Azores revealed that the Azorean community relies on extensive migrant networks and social relations to maintain ties between Azorean and California homelands, that these island-centric networks impact settlement patterns in the San Joaquin Valley, and that they shape the region's Cal-Azorean landscape. The notion of *islandness* is suggested as a way to explain the character and persistence of Cal-Azorean landscapes. The stability of Cal-Azorean ethnic landscapes and the recent flourishing of cultural activities and programs such as the Portuguese language school may indicate that the San Joaquin Valley is emerging as California's most thriving and vibrant Azorean archipelago homeland.

References

- Azevedo, A. 1990. Centennial Album and "Notes For Its History" *Irmadade do Divino Espirito Santo do Estado da California*. Hayward, CA: Supreme council IDES.
- Allen, J. P., and E. Turner. 1988. *We the People: An Atlas of America's Ethnic Diversity*. Macmillan, New York.
- Baganha, M. I. 1995. "Unbroken Links: Portuguese Migration to the USA." In *The Cambridge Survey of World Migration*, edited by R. Cohen. Cambridge: University Press.
- Bohme, F. G. 1956. The Portuguese in California. *California Historical Society Quarterly* 35:233–252.
- Cardoza, E. C. 1991. *Azorean Folk Customs*. San Diego, CA: Portuguese Historical Center.
- Gayton, A. H. 1948. The Festa da Serreta at Gustine. *Western Folklore* 7(3):251–265.
- Goulart, T. P. 2003. *The Holy Ghost Festas: A Historic Perspective of the Portuguese in California*. San Jose, CA: Portuguese Heritage Publications of California, Inc.
- Graves, A. R. 1977. "Immigrants in Agriculture: The Portuguese Californians, 1850s–1970s." Ph.D. dissertation, University of California, Los Angeles.

- Gregory, C. A. 2004. "Geography, Perception and Preservation of Portuguese-American Landscapes in California." Ph.D. dissertation, University of California, Davis.
- Holmes, Lionel, and Joseph D'Alessandro. 1990. *Portuguese Pioneers of the Sacramento Area*. Sacramento, CA: Portuguese Historical and Cultural Society Publications.
- Kritz, M., L. L. Lim, and H. Zlotnik, editors. 1992. *International Migration Systems: A Global Approach*. Oxford: Clarendon Press.
- Our Lady of Assumption official website. Available at: <http://www.ollassumption.net/About.htm> (accessed 1 September 2011)
- Our Lady of Miracles official website. Available at: <http://www.ourladyofmiracles.com.html> (accessed 1 September 2011).
- Rocha, G. P. N., and E. Ferriera. 2011. "General Azorean Emigration Traits of the Second Half of the Twentieth Century to the Present." In *Between Two Worlds: Emigration and Return to the Azores*, edited by G. P. N. Rocha, E. Ferreira, and D. Mendes, 47–63. Government of the Azores, Nova Grafica, Lda.
- Santos, Robert L. 1995. *Azoreans to California: A History of Migration and Settlement*. Denair, CA: Alley-Cass Publications.
- U.S. Census Bureau: "2005–2009 American Community Survey 5-Year Estimates," Available at American Factfinder, <http://factfinder.census.gov> (Accessed 12 October 2011).
- Warrin, D. 1997/1998. "An Immigrant Path to Social Mobility: Portuguese Atlantic Islanders in the California Sheep Industry." *California History* 4:94–107.
- Williams, A. M., and M. L. Fonseca. 1999. "The Azores: Between Europe and North American." In *Small Worlds, Global Lives: Islands and Migration*. Edited by R. King and J. Connell, 55–76. Great Britain: Cromwell Press.
- Williams, J. R. 1982. *And Yet They Come: Portuguese Immigration from the Azores to the United States*. Staten Island, NY: Center for Migration Studies.

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Geographic Education

Learn by Going: Critical Issues for Faculty-Led Study-Abroad Programs

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Abstract

In an increasingly globalized world, a study abroad experience provides students with the opportunity to learn about the world and critical global issues first-hand. It is “learn by going.” A faculty-led program is a special form of study abroad where faculty create programs for their students and accompany them abroad as teachers and trip leaders. It provides a safe, structured, supervised, convenient, academically rigorous, and cost-effective way for students and faculty to go abroad and obtain the benefits of an international experience. However, a faculty-led program is more complex, more demanding, and entails more responsibility than one might expect. The purpose of this paper is to identify the larger process and the critical issues involved in creating and carrying out a successful faculty-led program. The perspectives and roles of faculty and staff are emphasized. It provides insights, lessons learned, and recommendations based on the authors’ practical experience and accumulated knowledge gained over twenty-five years of involvement with study abroad. The content draws on Cal Poly’s faculty-led programs in six countries, but it is broadly applicable because the issues and actors are similar across campuses.

Introduction

IN AN INCREASINGLY GLOBALIZED and interconnected world, a study abroad experience is a vital part of a university education. The benefits of studying abroad include developing global awareness and cross-cultural competence, more effective language learning, resume building, and better preparation for graduate school (Anderson *et al.* 2006, Llanes and Muñoz 2009, Michigan State University 2011, and Norris and Gillespie 2008). The focus of this paper is on one type of study abroad program, specifically the faculty-led program. A faculty-led program is an academic term abroad that is developed by faculty from a university for students from that university. The faculty accompany students to another country, teach courses while

on the program, and act as trip leaders. A faculty-led program provides a unique opportunity for students to step outside the classroom and learn about the world firsthand, and for faculty to teach and mentor their students through a critical-learning and life-changing experience.

Faculty who are new to faculty-led programs may not have a full understanding of the many aspects and complexities involved in creating, administering, and leading a program. “Developing a faculty-led study abroad program is more demanding than, and involves a great deal more responsibility than, planning and developing on-campus courses” (Texas State University 2007:4). While abroad, faculty take on many roles, including teacher, manager, tour guide, mentor, friend, and others. There are multiple academic, administrative, and logistical considerations that need to be taken into account. A faculty member cannot take students abroad without approval, and without addressing issues such as health and safety, budgets, and contracts. The purpose of this paper is to help faculty gain a fuller understanding of the process, roles, and responsibilities involved in creating a successful faculty-led program.

The definition of a faculty-led program puts the faculty at the center of a program. However, in practice there is a significant role for university staff. The day-to-day management of a program involves many administrative tasks, which take time. Someone must also ensure that the program is in compliance with university policies and procedures. As a faculty member, it is very difficult to know everything and to do it all alone. Running a faculty-led program is more likely to be a faculty-staff partnership, where staff play a central role. However, many faculty view staff (and administration in general) as an obstacle to taking students abroad, or simply as an annoyance. Therefore, a goal of this paper is also to help faculty understand the vital role that staff play in successful and sustainable faculty-led programs and the need to work cooperatively toward these ends.

The authors bring the perspectives of both faculty and staff to this study. The first author is a geographer who has accompanied students ten times to four countries (Mexico, Peru, Cuba, and Spain). The second author is a staff member and the supervisor of Faculty-Led Programs in the study abroad office at Cal Poly. Her office coordinates programs to six destinations (Australia, Costa Rica, London, Peru, Spain, and Thailand). Both authors have extensive experience with

every aspect of faculty-led programs, including going as students, teaching on them, creating new programs, and administering them. This paper addresses most of the components of a program, but it is not explicitly intended to be a handbook or a detailed how-to guide to faculty-led programs. It offers insights, lessons learned, and recommendations based on the authors' practical experience and accumulated knowledge gained over twenty-five years of involvement with study abroad. The information presented below draws heavily on the experience of Cal Poly's faculty-led programs, but it is broadly applicable because most of the issues and actors are similar across university campuses.

Faculty-Led Programs: Need and Benefits

For this paper, a faculty-led program is defined as a credit-granting college-level study abroad program where faculty accompany students from their university as teachers and trip leaders. They offer regular catalog courses but teach them in another country. These programs are created by the home university, administered in-house, and intended for the students from that campus. This is not a travel program or about attending a conference or a contest or performance. It is an academic term abroad (i.e., summer, quarter, or semester). A faculty-led program is further distinguished from an affiliated program, which also employs faculty to teach abroad but is run by private or nonprofit companies, administered off campus, and enrolls students from many schools.

Cal Poly has three types of faculty-led programs, classified by where they are housed and by who initiates, controls, and administers them. There are university-level programs that are housed in and administered by the study abroad office on campus. There are department-level programs that are housed in an academic department and administered by the faculty and staff within that department. Cal Poly also has course-level extended field trips that are initiated and administered by a specific faculty member and tied to a course. However, in all cases the study abroad office has a role in ensuring that every program complies with university policies. A faculty-led program can be annual, biannual, periodic, or one-time. Programs that are offered on a regular basis usually go during the same term (i.e., fall, spring, or summer) each year. Within the larger umbrella of programs, some may focus on general education courses, thus appealing to all students on campus. Others may focus on language courses or target a specific major or specialization.

Academically, the best place to learn about the world is to go there. Cal Poly has an applied approach to learning that is reflected in its motto, "Learn by doing." Study abroad is "Learn by going" (Zueschner 2011). Participation in a study abroad program is one of the most effective ways to globalize education (Anderson *et al.* 2006). Students gain a global perspective as they learn first-hand about critical global issues and other countries and cultures. Also, by leaving the U.S. and viewing it from afar, Americans see their own country, culture, and foreign policy with greater objectivity and perspective. For language acquisition, studying abroad is clearly the best way to learn a second language (Llanes and Muñoz 2009). Personal growth is another important benefit of studying abroad. Adapting to life in another country is challenging, and students come back more mature and well-rounded. A study abroad program looks good on a résumé and can expand a graduate's career possibilities (Norris and Gillespie 2008). Study abroad is also fun and brings a sense of adventure. Students consistently state that their study abroad experience was the most important part of their university education (Washington State University 2006). The world opens up to them, and their lives are forever changed.

There are benefits to students that are specific to a faculty-led program. Faculty are available to provide on-the-ground assistance any time, day and night. The curriculum is seamless, and students earn resident credit. University-operated programs are almost always cheaper than the external affiliated programs. Plus, financial aid and scholarships apply. Parents, especially those of female students, feel safer sending their children on a university-organized and -supervised program. They are going with someone from the university. Faculty-led programs are convenient for students because they are in-house programs with staff support. Everything is pre-planned at their university in accordance with the academic, administrative, and logistical requirements of that university. Courses, excursions, housing, transport, and food are included in an integrated package. Students just have to pay, register, and go. While these programs have been criticized for dumbing down study abroad and having limited cultural immersion (see Lewis 2009: xiv), our experience at Cal Poly suggests that even introductory, short-term programs lasting four weeks have a dramatic and life-altering impact on students' perceptions of the world and their place in it.

The faculty themselves have a lot to gain from participation in a faculty-led program (Hulstrand 2009). Teaching abroad makes

them more competent teachers. They come back with new ideas, material, and real-world perspectives that they can integrate into the classroom. Faculty gain legitimacy in the eyes of the students because they have “been there.” Teaching abroad can also support faculty research and intellectual growth. It is important to emphasize that faculty are busy teaching and working as trip leaders while on a program. However, time in the field can generate ideas for research, and reading and writing can be done during free time. It is also possible to structure coursework where students are involved in data gathering. Faculty participation in study abroad can help in the tenure and promotion process. It supports teaching and research, and creating and administering a faculty-led program involves service to a department or university. In addition, teaching abroad invigorates and reenergizes faculty. The students are more enthusiastic and engaged. Faculty get to know them better, and it is professionally and personally rewarding to be a part of guiding the students through a transformational and life-changing experience. Finally, faculty can receive extra salary if they teach on a summer program, and in many cases they take their families with them.

Choosing a Location: Place Matters

Study abroad is a form of educational tourism, as it involves travel with a group to another place for the purpose of engaging in learning activities (Bhuiyana et al. 2010). The location or destination is critical to the success of a faculty-led program. It is important to choose a place, country, and region of the world where students want to go. Apart from the academic rationale, three factors are critical to site selection. They are safety, attractiveness of the place, and accessibility (Keese 2011). Safety—or, more accurately, the perception of safety—is first and foremost. Students will not go to places where they do not feel safe. Even if they want to go, their parents may not pay to send them if they perceive the location to be unsafe for their children. (Cal Poly suspended its Mexico programs because it cannot send students to countries that are on the U.S. State Department travel warning list.) The second factor is attractiveness of place. Appealing places with an “exotic” image will attract more students. It is difficult to recruit students to go to places that are unattractive, unknown, and lack interesting things to do during the program. While the academic program is central to the mission of study abroad, students are also thinking about travel and adventure. Only programs that enroll sufficient student numbers will be viable over the long term. Finally, the study site

must be accessible. Places that are too far away, lack major airports, or are too expensive to get to will attract fewer students. They want to get off the beaten path, but at the same time they need to feel safe, connected, and comfortable.

A study site is usually chosen because a faculty member is passionate about it and has personal experience there. This passion for place is an important factor in the success and sustainability of a program. It drives faculty and others to work hard to make the program happen and to sell it to others. However, that place must still have a broad appeal to the target student group if the program is to be successful over time. Just because one faculty member wants to go somewhere does not mean that sufficient numbers of students will want to go there. Cal Poly's faculty-led study sites are chosen with multiple criteria in mind. We look for places where we can have a strong academic program, but ones that are also interesting and fun to visit. Above all, they have to market well. Peru was chosen over other South American countries because of its desirability as a destination. While it is a great place to study Spanish and learn about Latin America and the many global issues that play out there, the program is marketed emphasizing the study site (colonial Cuzco), and the excursions to the nearby Sacred Valley of the Incas, Machu Picchu, Lake Titicaca, and the Peruvian Amazon. Thailand was chosen for the mystique of its natural beauty, eastern culture, hospitable people, amazing food, ruins of ancient kingdoms, and low cost. However, once there, Thailand is an excellent location to learn about the emerging Pacific Rim region and its importance to the world economy. London was chosen because it is the leading student travel destination, it is English speaking, and it is a fun place to go. However, as a world city, London has an unparalleled mix of history, architecture, theater, art, and global economic and political reach, making it a living laboratory for a strong academic program. London also appeals to faculty and students from a variety of disciplines, which facilitates student and faculty recruitment.

Committed Faculty

As the name indicates, the faculty are central to faculty-led programs. They accompany the students on the program. A faculty member is the go-to-person while in another country. Leading a faculty-led program is hard work. It is not a vacation or a personal research trip. It is a full-time job. A high level of commitment on the part of the faculty is required in order to have a successful program. Faculty assume multiple roles and must have active involvement in all aspects

of the program. The first and most obvious role is that of a teacher. The coursework provides the foundation for the academic program and the learning that occurs while studying abroad. However, faculty are not just teachers. They also play an important role as trip leaders or managers. When multiple faculty go on a program, one is usually designated as the trip leader or resident director. Faculty play a liaison role. They act as the link between the university and the service provider (a third-party organization with which a university contracts to make on-site arrangements). The faculty is the university's representative on the ground to ensure that the program is receiving good service. It is important to build and maintain good relationships with the service provider because the university wants good service. Another faculty role is that of mentoring students. For many of the students, it will be their first time travelling outside the U.S., which can be a transformational experience. Faculty help guide students through an awakening as the world opens up to them. Faculty play the role of counselor. Some students experience culture shock, homesickness, attachment, and/or mental health issues. Others will have disciplinary problems such as alcohol abuse, drug use, or cheating. In consultation with the appropriate offices or services at the home campus, faculty may need to address these issues with the students. As the trip leader, the faculty is the campus' representative on the ground, thus taking on the role of administrator. Faculty may have to work with department chairs, deans, campus staff, and upper-level administrators, as the circumstances require.

Before the program begins, faculty play a critical role as promoters of the program. There will be no program unless it is marketed and students are recruited. Faculty must be actively engaged in this process. Faculty should be giving presentations, distributing marketing materials, and communicating with colleagues and students. They cannot rely on department or study abroad office staff to do this entirely for them. Faculty play a role as student advisors. Students will come to them with a range of questions about the coursework and the program in general. Faculty need to be well-versed in all aspects of the program and help the students with pre-program planning and decision-making. The faculty's role does not end with the program. They must reconcile accounts, submit grades, write a post-program report, help market for the upcoming year, and mentor new faculty who are interested in the program. In the end, the faculty role is the most important role in a faculty-led program. They have a hand in everything. Faculty do a lot of work up front and behind the scenes that the students may not see, understand, or appreciate

to keep the program running smoothly. They are constantly shaping the content of the program, its image, and the student experience.

The Coursework

On a faculty-led program, students are taking courses for academic credit. The courses are the regular catalog courses that are offered at the home university, except they are being taught abroad. Cal Poly students take Cal Poly courses with Cal Poly professors, but in another country. The benefits are that students register in the same way, they receive resident credit, financial aid applies, and the courses meet the same degree requirements as if they were taken on campus. There are no transcript, articulation, substitution, or delay issues. Deciding which courses to offer has important consequences for the nature and success of a program. Faculty must offer courses that students need and want to take. Without student numbers, there is no program. Courses should be interesting and relevant to the country and region where they are being taught. In order to teach appropriate courses, faculty will need expertise in the place. However, just because a faculty member is enthusiastic about a course, does not mean that the students will want to take it. Faculty must be flexible and adapt to the needs of the program.

The kinds of courses that are offered will have an important impact on a program's focus, learning outcomes, student numbers, faculty participation, and overall sustainability. Coursework types include general education, language, major- or department-specific, and/or service learning. If the goal is to create a program with long-term staying power, general education courses have the broadest appeal. GE courses attract students from across the university, as well as faculty from many departments who can teach those courses and who have expertise in a particular country or region. Upper-division GE courses are preferred because they are needed by far more students who are likely to be interested in a faculty-led program. Most juniors and seniors have already completed their lower division GE requirements. All of Cal Poly's faculty-led programs (except one) offer Humanities 310: World Cultures, which is a sub-titled, upper-division GE course with location-specific content (e.g., HUM 310: Culture of Spain; HUM 310: Culture of Southeast Asia; HUM 310: Culture of Latin America).

The second type of coursework includes language courses. Spanish courses are central to Cal Poly's programs in Mexico, Peru, and Spain. Cal Poly uses a service provider or host school to provide the

language courses. Students enroll in Cal Poly Spanish courses, but they are taught by local teachers employed by the host school. Cal Poly faculty and staff work with the host schools on course content, academic standards, and grade reporting. Spanish language courses are taught alongside the courses taught by Cal Poly faculty, which are taught in English. Language and culture programs are a common study-abroad model. Language, especially Spanish, can be a very big draw and a marketing tool. However, it is also necessary to have programs where language is not the focus. Programs that do not include language allow access to more countries and provide options to students with different majors and interests. Some students do not want to study language. Some languages are too difficult to learn, are less globally relevant, or are not taught on the home campus. Cal Poly's program in Thailand is a good example. Thailand is a very popular student destination, but few if any students want to study the Thai language. All courses are taught in English. Students learn a few pleasantries in Thai, but it is a cultural enrichment element in the GE course, not formal language learning. The Cal Poly in London program is also popular because the United Kingdom is an English-speaking country.

Coursework can be department- or discipline-specific. Faculty can teach courses and take students from within their own discipline. At Cal Poly, the architecture, landscape architecture, and wine-and-viticulture departments participate in major-specific programs. These programs can be sustainable year after year, but departments must commit to sending faculty, and those departments and faculty have a greater responsibility for recruiting their students. Cal Poly's Australia program is a hybrid. Two faculty participate. One is an agricultural sciences professor who teaches wine-and-viticulture courses, while the other teaches general-education courses. Each type of student can take two in his/her focus area and one in the other. Taking a GE course allows major-specific students to learn more about the culture of the place in which they are studying. The GE students take a course on wine that relates to the Adelaide area and is interesting to non-majors. Hybrid programs can be mutually beneficial to major and GE students and broaden the appeal of the program.

The final type of coursework incorporates service learning or community-based volunteer opportunities, which is a trend on many university campuses (Rubin 2009). Cal Poly has an office on campus to promote the integration of service learning into coursework. Integrating volunteer work into the faculty-led structure provides a

hands-on element to a course. It connects students with people and communities and allows for another level of immersion. By doing volunteer work and processing the experience as a group, students can develop a deeper understating of the issues addressed in a course. Cal Poly has a “learn by doing” motto, and its programs in Peru and Thailand integrate service-learning components. In recent years, a number of course-level extended field trips at Cal Poly have been based on service learning. It is important to note that doing service learning abroad usually requires the help of a third-party service provider to make contacts and arrangements.

It is important to distinguish a faculty-led program from a field trip, a travel trip, or a vacation. Students are taking courses for academic credit while abroad. Faculty and staff need to emphasize to students from the beginning that they are participating in a serious academic program. Academic rigor is, and should be, central to the mission of study abroad. Students need to go into the program with the mindset that they are there to attend classes and study. Academic rigor should be used as a selling point. Students learn more in a structured program that has coursework than they do when just traveling or backpacking. They are more immersed, engaged, and aware; do more processing; and experience more personal growth. Study abroad has long struggled with the image that students do a lot of partying and very little studying (Lewis 2009: xv). The faculty are ultimately responsible for maintaining academic rigor. A program can be serious academically and still be fun.

While faculty-led courses have the same prefix and name as those being taught on the home campus, in practice, faculty need to adapt their courses to fit the place, learning environment, program structure, and demands of living abroad. Courses should relate to the site. This is part of the academic reason for being there. Ultimately, the course will not be exactly the same as the one taught in the classroom at home. At home, students may attend class for three or four hours a week. While abroad, they can live it all day, every day, seven days a week. There is more experiential learning. A study-abroad course needs to balance classroom time with getting out and learning about the place by experiencing it. Assignments can involve interviews, observations, photo essays, and reflection papers, thus reflecting what the students are experiencing. Field trips, museum tours, and other excursions, especially if they are guided or include lectures, can be counted as class or laboratory time.

While studying abroad, the students will have less time and energy for homework and reading. Students have demanding schedules and face many challenges, including learning a language, adapting to a new culture, living with strangers, navigating public transportation, and others. All of this can be stressful and extremely tiring, both physically and mentally. The amount of work that is required should reflect this reality. This does not mean that the courses are less rigorous or that the students are learning less. They are actually learning more, but in different ways. With a demanding schedule, students will also need some carefully scheduled free time to explore the place on their own, reflect, relax, and have fun. If faculty overload the students, they will either not do the work or resent it, and it can detract from the overall experience.

Good Third-Party Service Provider

Having a good service provider is critical to the success of a faculty-led program. A service provider is a third-party organization with which the university contracts to make on-site arrangements. These are the people in the other country who provide facilities, language instruction, service projects, housing, field trips, transportation, and other support services. Service provider staff know the language, culture, and laws of a country. They know the rules of the game on the ground and how to get things done. This is especially important when there is an emergency. Local staff are there to help if a student gets sick or injured, when there is political strife, or if there is a natural disaster.

The service provider is invested in your having a successful program. It is their business, and they want you to come back. Without a service provider, a program will be much more faculty- and staff-intensive. The faculty will have to know and manage every program detail, as well as stay on top of any changes that occur in a country. It can be riskier to run a program without a service provider. With a good service provider, the university can also send new faculty with the assurance that there will be someone there to help them. Furthermore, faculty and staff may change at home, but having a service provider gives continuity and helps make the program sustainable on the international side.

Several types of organizations can act as service providers, including a university, a private language school, an NGO, or a travel agent. Cal Poly uses universities in Australia (University of Adelaide), Thailand (Chiang Mai University and Suan Sunandha Rajabhat Geographic Education

University), and Spain (University of Valladolid) as service providers. Cal Poly works with private Spanish-language schools in Mexico (Cuauhnáhuac Spanish Language School in Cuernavaca and Olé Center for Language and Culture in Querétaro) and in Peru (Centro Bartolomé de Las Casas). These schools do more than just give the language classes. Most have the capacity to arrange all elements of a program. Cal Poly contracts with NGOs for its summer programs in Peru (ProWorld) and London (Foundation for International Education). ProWorld is a U.S.-based NGO, so contractual arrangements are simpler. However, Cal Poly also successfully works with many non U.S.-based organizations. A travel agent can act as a service provider. In Peru, Cal Poly contracts with SAS Travel for excursions to Machu Picchu and Lake Titicaca, and with Mondo Verde Expeditions for its Amazon excursion. In Spain, European Discoveries provides guided excursions in and around Madrid. In practice, most Cal Poly programs have multiple service providers. Faculty and staff who manage faculty-led programs need to be good coordinators in order to deal with the multiple and complex elements that go together to make up a program. If you do work with a service provider, you must address the contract issue with your university.

Support from Staff and Administration

The day-to-day management of a faculty-led program involves many tasks and requires time. Someone has to recruit students, process applications, collect fees, check academic eligibility, get students registered, and deal with insurance, budgets, contracts, and service providers. Who is doing all this work? Who creates, collects, and stores the paperwork? These are staffing questions. As a faculty member, it is very difficult to do everything alone. The management and coordination of a faculty-led program ultimately requires collaboration between faculty, the service provider, and on-campus staff and/or the study-abroad office. Staff plays a critical role in a faculty-led program, whether directly or indirectly. Many faculty view staff as getting in the way, and sometimes treat them as inferior. In practice, faculty need to establish a good working relationship with staff if they expect to have a successful and smooth-running program.

Staff support is also important to the continuity and long-term sustainability of a program. Sustainable programs cannot rely on one faculty member. What happens when that person is gone? People retire, become ill, and sometimes pass away unexpectedly. If one person has all the knowledge about the program and is doing

most of the work, then the program ends with the person. Having departmental staff or the study abroad office involved can help a program to have a longer institutional life. This does, however, raise issues of responsibility and ownership. Does the program belong to a faculty member, a department, or a study-abroad office? Where is it housed, who administers it, and how is the workload divided up?

A faculty-led program also needs support from administration. The creation of a program will require department, dean, and provost approval. Administration needs to be on board early in the process. For faculty, your department chair and dean will need to sign off on course offerings, minimum enrollment numbers, and release time away from campus, as well as address potential salary, benefit, and funding questions. There is also a political element that shapes the context in which study-abroad programs operate. Does upper-level administration view the concept of study abroad as critical to the university's mission? Is it included in the strategic plan? Study abroad produces more qualified students, makes faculty better teachers and scholars, globalizes the curriculum, and can enhance the reputation of the university. Faculty and staff should take advantage of every opportunity to make known how faculty-led programs benefit the university and its objectives. Faculty may not fully appreciate the larger institutional or political element of study abroad. One should not, however, view administration as a hindrance. On the one hand, you need their sign-off. On the other, you want their buy-in on the larger university mission. In the end, study abroad is a collaborative enterprise. Faculty must be flexible and have the ability to work with people across campus.

Proposal and Compliance Issues

All university programs require some kind of proposal. There are two main reasons for this. First, from a practical perspective, writing a proposal forces you to have a plan, to think through what you want to do, and to have other people review it and give you feedback. Second, taking students off campus, especially to another country, involves serious academic, administrative, and liability issues. Submitting a proposal initiates a process that will lead to proper review and approval. A proposal does not have to be long, but it should have clear information about the major components of the program. This may include program-specific and university objectives, the academic program, the study site, excursions, housing, transportation, the itinerary, the service provider, a budget, and

roles and responsibilities of those involved in the program. Writing a proposal may seem like another hoop to jump through, but it is in the best interest of the faculty and the university to do this. In the end, it will make for a better program.

When taking students abroad, there are a number of legal and policy requirements that faculty and departments may not be aware of (O'Rourke and Iammarino 2010). At Cal Poly, faculty-led programs must be in compliance with university and system-wide policies on liability, health, safety, contracts, and budgets. Faculty and the study-abroad office work with a core group of offices on campus that are informally referred to as the administrative trilogy. The risk-management office has several requirements. Students must sign an assumption-of-risk and release form, which protects the faculty, staff, and university from legal liability. A medical information and authorization form allows Cal Poly's on-site faculty to consent for medical treatment if the student is unable to make the decision. The California State University (CSU) system requires students to be covered by a travel medical insurance policy, which should be included in the budget and the student program fee. Every program is also registered with the U.S. State Department, and emergency contact information is provided to the campus police department, which can receive and direct calls twenty-four hours a day. Faculty are required to complete online emergency-preparedness training, and the study-abroad office has created a crisis-response plan to educate faculty and on-site coordinators on how to deal with a crisis ranging from natural disasters to political upheaval to individual students having medical or mental-health emergencies. The university also has a crisis-response team with representatives from across campus that can be mobilized if needed in an emergency situation. In short, the campus needs to know where you going, what you are doing, how to contact you, and what to do in case of an emergency.

At Cal Poly, the budget office must review and approve a program budget. If a program is collecting fees from students, there has to be an agreement to indicate how funds are collected and spent. A detailed budget is submitted to the campus fee-advisory committee, and once approved, a campus account is created for a specific program. The university budget office examines these accounts periodically, and the CSU can audit them. The third office in the trilogy is contracts and procurement, which reviews and approves the agreement with the third-party service provider. The agreement defines the contractual obligations on the part of the service provider

and the university, the price, cancellation policy, and exchange rates. When creating a faculty-led program, it is necessary to get into contact with the appropriate offices, acquire or create the necessary documents, and get into compliance. Work on the compliance issues needs to begin six to twelve months before the program start date. This may seem like a daunting task and discourage many faculty from taking students abroad. However, at Cal Poly, the three offices mentioned above, along with the study-abroad office, advise faculty and departments on compliance issues, and many of the documents have already been created and are available online. Also, it really helps to have study-abroad office staff working on this. They work with these issues every day, and it is their job to know what to do.

Recruiting Students

Marketing is critical to the success of a study-abroad program. The program can be amazing, but if the students do not know about it, it will not get the enrollment numbers. Furthermore, students have many study-abroad options to choose from, so the program needs to stand out in a highly competitive market. Marketing starts with proposing and creating a program that will market well. Promotional efforts need to be multidimensional. Cal Poly programs are marketed with websites; posters; flyers; brochures; sandwich boards; e-mail announcements to students, faculty, and departments; Facebook; study-abroad fairs on campus; brief classroom presentations; and longer informational meetings. The most important element in marketing is the forty-minute informational meeting. A lot of effort should be put into creating an effective PowerPoint presentation. The presentation needs to be concise (twenty minutes), visually dynamic, and highly engaging. It should emphasize the place and the experience. You want to grab the students' attention and move them emotionally. Include dramatic imagery of the place and of students in that place. Every slide needs a graphic. Animate all the slides, and insert short video clips if you have them. Keep the informational meeting simple. Give an outline of program components (e.g., a few facts about dates, location, courses, excursions, housing and meals, eligibility, cost, and financial aid) but do not get bogged down in details. The goal is to get the students excited about the place and the program and to encourage them to visualize themselves going there. We want to emphasize the importance of avoiding a long, detailed, and boring presentation. Leave most of the details for the website, individual advising in the office, and the pre-departure orientation meetings.

The program website is the second-most important marketing tool. The website needs to have a comprehensive, but still concise, presentation of all aspects of the program. Like the presentation, it also should be well illustrated and visually engaging. All the other marketing efforts should be designed to get students to view the website and, ultimately, to attend an informational meeting. While technology and social media are important marketing tools, students still rely on face-to-face interaction to help them make decisions about studying abroad. They will go to an informational meeting because they want to see an interesting and informative presentation, and they want to talk to real people who have answers to their questions. Very importantly, arrange to have students at the meeting who have been on the program. Students listen to their peers. You may only get one chance to sell the program. Make it count.

Faculty need to play a central role in marketing. Staff can help with marketing efforts, but do not count on them to do it all. As faculty, you are front and center in faculty-led programs. You have the knowledge and passion for the place and program, and you are the one going with the students. To a certain extent, you are selling yourself as someone they want to spend time with and learn from while abroad. Faculty need to distribute marketing materials, talk to as many students and colleagues as possible, and give a lot of brief classroom presentations. Prepare a three-minute PowerPoint presentation (with pictures) that identifies the program, points them to the website, and gives the date of the next informational meeting. Arrange with colleagues across campus, especially those who have large-section general-education classes, to allow you to give the brief presentation at the beginning of their classes. Marketing is a numbers game and depends on effort. If you visit a lot of classrooms, distribute a lot of materials, and talk to a lot of people, the program has a better chance of meeting enrollment targets.

Pre-Departure Orientation

Approximately two months before departure, there needs to be one or two mandatory orientation meetings. It is better to have fewer meetings where participation is required than have many pre-departure meetings where attendance will likely be lower. Orientation meetings serve two functions. The first is informational. This is the time to pass on the details about the program. Students should receive information on topics such as the weather, the basics of packing, designated arrival time and location, itinerary, textbooks,

obtaining money, electrical current, among other things. A discussion about local customs, courtesy, and etiquette, and what it means to be a foreigner or guest in another country, is also appropriate. American students often behave with a sense of entitlement when abroad. In their mentoring role, faculty can help students be aware, flexible, and adaptable.

The second function of a pre-departure meeting is to pass on the essential university-mandated information. Students should receive information about health and safety, emergency contacts, academic policies, university alcohol and drug policies, insurance coverage, and general legal, risk, and liability issues. Faculty need to research university policies and sanctions for conduct violations, or create such policies and sanctions for the program if necessary. At Cal Poly, students sign a student-participation agreement that outlines expectations of behavior. For legal reasons, it is important that faculty and staff do not give medical advice. Students can be directed to resources where they can get information. The Center for Disease Control (CDC) website provides country-specific information on health, vaccines, food, and water. Students should consult with their health provider or the campus health center about vaccines. Some vaccines need to be received six to eight weeks prior to departure. This is why the first orientation meeting needs to be at least eight weeks before the start of the program. Students should also be directed to the U.S. State Department website for travel- and country-specific information, which includes sections on safety and crime for each country.

Keep in mind that since students are still at home, much of the information will seem abstract because they are not experiencing it. They will not comprehend everything and forget much of what is said. Plus, there will always be a small number of students who cannot attend an orientation, even if it is mandatory. The orientation material also needs to be put into a student handbook. In that way, students have been both told the critical information and received it in writing. Prior to the first meeting, the handbook should be sent by e-mail to participants and posted on the program website. Before the program begins, have students sign a form acknowledging that they received the handbook, read it, and agree to the material contained within it. In that way, they cannot claim they did not receive the essential program information. They are adults and need to be held accountable.

Given liability issues, the Cal Poly study-abroad office does not arrange group flights. Students are responsible for their own transportation and meet at the study site at a designated time and place. The program begins at that point. There are multiple benefits to this approach. Students can get their best deal and can use frequent flyer miles. They decide when to go and leave. Many students want to travel before or after the program. It requires less staff time to have students arrange their own transportation to the study site. While some students do arrive a few hours or a day late, they always get there. Faculty, university staff, and service-provider staff should have each student's transport/flight information so they can monitor their arrivals. Cal Poly staff sets up Facebook groups for all of its faculty-led programs so students can share information and travel together if they wish to make those arrangements.

Once students arrive at the destination, there needs to be an on-site orientation. This should be coordinated with the service provider, whose staff will give their take on the various program issues (e.g., health and safety, homestays, expected behavior, culture shock, staff support and contacts, what to do in emergencies, etc.). Once students are on-site, the information will be more meaningful because they are there and the program is really happening. They will be engaged and actually listening. Typically, on-site orientations also include a tour of facilities, a city tour, and instructions on how to get around and use public transportation.

Assessment

In order to have a successful program and improve it over time, it is necessary to get feedback. All aspects of the program should be assessed, and all of the actors in the program need either to provide input or be evaluated. Student evaluations are critical to program assessment. They are your customers and will be your best (or worst) promoters, depending on their experience. Students should be asked to give feedback on the entire experience (faculty, courses, excursions, housing, the place, the service provider, staff/study-abroad office support, marketing, pre-departure planning, etc.). The students should evaluate the faculty role both as a teacher and as an on-site manager, which will help departments and study-abroad offices to determine whether they want to send particular faculty members again. We suggest that student evaluations be administered in written form on-site near the end of the program, and then brought

home in a sealed envelope. Evaluations that are administered electronically get less than a twenty-percent return at Cal Poly.

Program assessment should also include feedback from the faculty and from the service provider. Faculty feedback begins with weekly e-mail updates to the department or study-abroad office. The faculty should also submit a post-program report. The faculty report includes comments on the same topics that the students evaluate. However, this report will focus on the academic goals and on the organizational and logistical aspects of the program, including the service provider's level of service. The faculty report provides an on-the-ground, non-student perspective of the program. A report should also be solicited from the service provider. The service provider may have valuable insights into how the faculty performed, student participation and behavior, excursions, health and safety, and logistics, as well as how to improve the working relationship with the university. Finally, while the primary purpose of assessment is to improve the faculty-led program, the information gained would be useful in meeting more-general university-level assessment goals, should a department or study abroad office be required to submit such information.

Conclusions

In an increasingly globalized, interconnected, and conflicted world, having a global perspective is more important than ever. A university study-abroad experience provides students with the opportunity to learn about the world and study critical global issues first-hand. It is "learn by going." A faculty-led program is a special form of study abroad where faculty create programs for their students and accompany them abroad as teachers and trip leaders. It provides a safe, structured, supervised, convenient, academically rigorous, and cost-effective way for students and faculty to go abroad and obtain the benefits of international experience. However, many faculty lack a full understanding of the complex nature of a study-abroad program. They cannot just get some students, go abroad, and do whatever they want. The purpose of this paper is to identify the larger process and the critical issues involved in creating and carrying out a successful faculty-led program. This paper provides an applied practitioners' perspective on faculty-led programs. The authors have been students, faculty, creators, and administrators of these programs.

The overriding theme of this paper is that a faculty-led program is more complex, more demanding, and entails more responsibility than one might expect. A program has multiple elements and the faculty must have the ability to address and manage all the pieces in a coherent and organized manner. A timeline of twelve to twenty-four months is required from the idea phase to program completion. The actual time spent going on the program is just one piece of a much larger process. We do not want to discourage faculty from pursuing their desire to take students abroad. What we have tried to do is pass on what we have learned through experience about the various steps in the process, in order to help others understand what it takes to create a successful program.

The term “faculty-led” implies that the faculty member is in charge of the program and does everything. In practice, however, a faculty-led program is a collaborative effort involving multiple actors. We refer to an organizational trilogy in which the key players are faculty, staff, and third-party service providers. Faculty cannot do everything alone. It is important to understand faculty-led programs from the staff or administrative perspective. A program is faculty-driven, but it is university-supported and -supervised. Faculty need to pay special attention to the compliance issues. These are the university-mandated legal and financial requirements related to risk management, budget, and contracts. Faculty may view staff and administration as obstacles to taking students abroad, feeling that they have to jump through too many hoops. However, it is the job of staff to know about these issues and to advise and help faculty meet the university requirements for taking students abroad. While the faculty run the program, in its execution it has many pieces that intersect with multiple offices across campus. It is the responsibility of the faculty to seek out staff early in the process and to work collaboratively with the relevant offices.

Faculty, at least initially, tend to view a faculty-led program primarily from a teaching perspective: that they are going abroad to teach. However, as the central actor, we want to emphasize that faculty take on multiple roles. The obvious faculty role is that of teacher, as he/she is responsible for the coursework and academic program. However, as the trip leader and on-the-ground go-to-person, faculty also take on the roles of manager, tour guide, liaison, mentor, counselor, academic advisor, promoter, friend, disciplinarian, and university administrator. Faculty who think they are going abroad for a vacation or a research trip need to understand that leading a

faculty-led program is a full-time job that demands a high level of commitment. Faculty must have the skills and the motivation to fill all the roles that will be expected of them.

Finally, faculty need to be aware of the student perspective. The destination must be an exciting place where students want to go, and one that markets well. Faculty should offer courses that the students need and want to take. This means they might have to stretch themselves, get outside their narrow disciplinary comfort zone, and develop new course material. Faculty need to recognize that students have multiple motives for studying abroad. They go to take courses and earn credits toward their university's degree requirements, which reflects an academic motive. Otherwise, they would just take a vacation with their friends. We have emphasized that a serious academic program is the foundation of a successful faculty-led program. However, students also go abroad for the adventure and exploration that comes with traveling to and experiencing another country and culture. Faculty need to nurture this sense of curiosity and discovery in students. Program excursion sites should be chosen with this motive in mind as well. Students also go abroad because they want to have fun. This motive does not have to be in conflict with the demands of a serious academic program. Going abroad is fun, which is part of the allure. Faculty need to find a balance. It is the job of the faculty to create and manage the total experience for the students. They do this before, during, and after a program, on campus and abroad, and with students and behind the scenes.

References

- Anderson, P. H., L. Lawton, R. J. Rexeisen, and A. C. Hubbard. 2006. Short term study abroad and intercultural sensitivity: A pilot study. *International Journal of Intercultural Relations* 30:457–469.
- Bhuiyana, A. H., R. Islama, C. Siwara, and S. M. Ismaila. 2010. Educational tourism and forest conservation: Diversification for child education. *Procedia Social and Behavioral Sciences* 7(C):19–23.
- Hulstrand, J. 2009. Attracting Faculty to Education Aboard. *International Educator*, Sept+Oct. 09: 48–51.
- Keese, J. R. 2011. The geography of volunteer tourism: Place matters. *Tourism Geographies* 13(2):257–279.

- Lewis, R. (Ed.) 2009. *The handbook of research and practice in study abroad: Higher education and the quest for global citizenship*. New York, NY: Routledge.
- Llanes, A., and C. Muñoz. 2009. A short stay abroad: Does it make a difference? *System* 37:353–365.
- Michigan State University. 2011. International Studies and Program, Office of Study Abroad. Retrieved 1 September 2011 from <http://studyabroad.isp.msu.edu/>
- Norris, E. M., and J. Gillespie. 2008. How study abroad shapes global careers: Evidence from the United States. *Journal of Studies in International Education* 13(3):382–397.
- O'Rourke, T., and N. K. Iammarino. 2010. Legal, safety and budgetary issues in developing and implementing a health promotion/education study abroad course. *American Journal of Health Studies* 25(3):165–172.
- Rubin, K. 2009. Globalizing general education. *International Educator* Sept+Oct. 09: 20–29.
- Texas State University. 2007. *Bobcats abroad: Handbook for faculty-led study abroad programs*. Office of Study Abroad Programs
- Washington State University. 2006. *Education abroad: How to design a faculty-led program*. Education Abroad Office.
- Zueschner, R. 2011. Interim Director, International Education and Programs. Cal Poly State University, San Luis Obispo. Interview with author, 1 September 2011.

Geographic Chronicles

2011 Conference Report: Bishop, California

by Steven M. Graves, CSU, Northridge

The 65th Annual California Geographical Society conference was held at the Tri County Fairgrounds in Bishop, California, from April 29 to May 1. The weather and the scenery could hardly have been more spectacular for a spring conference. Many of the conference attendees were practically giddy over the location, and more than a few cast an early ballot for a quick return to the eastern slopes of the Sierras. Conference organizers Peter Vorster and Bob Voeks are to be congratulated for managing to plan and execute such a successful event at a remote location.

Despite the distance from a large population center, attendance was good. Over three hundred attended the conference, which compares favorably to other recent spring conferences and speaks well to the attractiveness of the CGS conference in tight budgetary times. With travel budgets slashed, nearly two hundred students still attended the conference, thanks in part to the rare affordability of the CGS conference.

This spring's field trip roster was superlative and many were breathless in their praise for what they saw and did on the trips. Attendance for the field trips was robust, with many of the trips filling up early in the registration process. Steve Irwin, a local community college professor, led a full-day geology-themed trip on Friday up through the 395 corridor. Grace Holder took a full roster of CGS'ers to Owen Lake to learn about dust-control planning and solar-energy issues. Another large group was led by David Lee to observe petroglyphs in Owens Valley. A few folks visited the Film Museum in Lone Pine as well.

Friday night's Bar-B-Q mixer featured a delicious menu, good fun, and a rousing talk and slide show about California agriculture by Paul Starrs from Nevada-Reno. About two-hundred-fifty folks were at the BBQ, nearly filling the dining hall to capacity. This represents a substantial increase in BBQ attendance, especially among students, and can probably be attributed to the inclusion of the cost of the BBQ in the cost of registration. The board will consider continuing this strategy for upcoming conferences.

Saturday witnessed a typical slate of papers, posters, and cartography exhibitions, most of which appeared to have standing-room-only attendance. There were a couple of workshops on pedagogy and technology. The presidential plenary talk was delivered by Scott Stine of CSU, East Bay, was well received and well attended too. The day was capped off by a panel session on preparing for graduate school and the screening of a film that chronicled the life, near death, and resurrection of Mono Lake.

The Awards Banquet capped off a successful conference with a hearty dinner (again compliments were lavished on the caterer) and a lively procession of award presentations, and some rambunctious speech-making by the guys from CSU, Fullerton. The student-run raffle was a big success again, funding the travel grants and soliciting loads of cheering, groaning, and laughs from the capacity crowd, many of whom were no doubt attracted by the generosity of Bill and Marilyn Bowen who underwrote the banquet's cost for students again this year. A hearty thanks to the Bowens and everyone who donated items for the raffle.

As usual, students won awards for excellent research and cartographic skill, garnering loads of congratulations from peers and proud glances from their advisors and teachers. This year the CGS presented Peggy Hauselt (CSU, Stanislaus) with its Outstanding Educator Award. We didn't present anyone with a service award, but the Herculean efforts of our own board member Peter Vorster in organizing the conference were certainly noted by the rest of the board and many attendees. The Friend of Geography award, made to Barbara Gleghorn and Joanne "Scotty" Wuerker, two ladies with a distinguished record of environmental activism and a sincere love of geography, brought down the house with thunderous applause and perhaps a tear or two of emotion from many in the crowd.

Sunday's field trips also enjoyed good attendance, despite the lengthy trips many folks had to endure *after* they completed the field trip. John Wehausen led a group into the Sierra to witness Bighorn Sheep; a largish group took a walking tour of Bishop's murals, led by the staff of the Bishop Mural Society; and Steve Parmenter of the Department of Fish and Game led another group to Fish Slough, where they learned about the problems of the Desert Pupfish. A large group went up to Mammoth Mountain with Sue Burak, Jeff Dozier, and Peter Vorster to learn about avalanche dynamics and efforts to mitigate their impact. Finally, two groups of CGS'ers traveled up to Mono

Lake to either canoe the lake itself while learning about restoration efforts, or to learn about the Tufa Towers and Island Volcanism.

All in all, the 2011 conference was a dandy. Many of the students at CSU, Northridge, were effusive in their praise of the entire experience, exhorting classmates who chose not to go to never miss another. These kinds of reports are sweet music to the leadership of the CGS and to those who care about geography and the lives of students. In 2012, we'll be back at it again, this time in Davis, where we'll try our level best to make the CGS Spring Conference as good the last one.

California Geographical Society Award Winners 2011

DAVID LANTIS SCHOLARSHIPS

GRADUATE AWARD (\$500):

Natasha Hanley, CSU Stanislaus

UNDERGRADUATE AWARD (\$500):

Brittany Gale, Saddleback College

GEOSYSTEMS AWARD (\$250)

GRADUATE

Dayna Quick, UC Santa Barbara

The Accumulation of Salt-Rich Dust from Owens Lake Playa in Nearby Alluvial Soils of the Sierra Nevada

UNDERGRADUATE

Jade Dean, CSU Long Beach

Follow the Leader: A Study on the Advancement of Native Shrubs into Non-Native Grasslands in La Jolla Valley, California

TOM MCKNIGHT PROFESSIONAL PAPERS AWARDS

Graduate Papers

FIRST PLACE (\$150):

Leaa Short, CSU Fullerton

King Coal: The Relationship between Coal Mining and Poverty in West Virginia

SECOND PLACE (\$125):

Sean Pries, University of Nevada, Reno

Just Like It Was Ours: The Expropriating of Public Land by Private Landowners along the North Fork of the American River, California

THIRD PLACE (\$100):

Tracy Valentovich, CSU Northridge

*Interpreting Valley Oak (*Quercus lobata* Nee) Recruitment Patterns in the Santa Monica Mountains, California, Using a Water Balance Approach*

Undergraduate Papers

FIRST PLACE (\$150):

Omar Mere, CSU Northridge

Segmented Assimilation and Neighborhood Attachment Among Latinos in Los Angeles

SECOND PLACE (\$125):

Patricia Rodriguez, CSU Northridge

Recruitment of Out-of-State Students to Midwestern Universities

THIRD PLACE (\$100):

Ryan Miller, CSU Chico
Suburban Decline

PROFESSIONAL PAPER CARTOGRAPHIC AWARD

FIRST PLACE (\$125):

Flavio Mercardo, El Camino College
The Populations Exposure to Flood Hazard in Southern Los Angeles County

SECOND PLACE (\$100):

Michele Tobias
California's Beach Plant Communities

THIRD PLACE (\$75):

Jared Nineberg, CSU Northridge
Santa Monica Pier

PROFESSIONAL COMPUTER-DISPLAYED CARTOGRAPHIC AWARD

FIRST PLACE (\$125):

David McCarter, CSU Northridge
Kamehameha's Unification of the Hawaiian Islands: 1782–1810

SECOND PLACE (\$100):

Melissah Ball, CSU Stanislaus
From Static to Interactive: CSU Stanislaus Goes 3D

THIRD PLACE (\$75):

David Hagens, CSU Chico
*The Spread of *Phytophthora ramorum* (Sudden Oak Death) in California*

JOE BEATON PROFESSIONAL PAPER POSTER AWARD

FIRST PLACE (\$125):

Stacie Townsend, CSU Long Beach
Abstractions of Activism: Editorial Cartoon Portrayals of Egypt During the 2011 Revolution

SECOND PLACE (\$100):

Maggie La Rochelle, UC Davis
The Poetry of Place

THIRD PLACE (\$75):

Sean Hogan, UC Davis
Geo-graphical Approach to California Rangeland Water Quality and its Associated Biogeochemical Influences

STUDENT TRAVEL AWARDS (\$150)

Brittany Gale, Saddleback College

Jerry McNabb, Cosumnes River College

Danielle Roberts, Orange Coast College

SPECIAL AWARDS

FRIEND OF GEOGRAPHY AWARD:

Barbara Gleghom and Scotty Wuerker

OUTSTANDING EDUCATOR AWARD:

Peggy Hauselt