College and Labor Market Performance of Native Hawaiians

PRELIMINARY, PLEASE DO NOT CITE

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Research questions

- Does there exist, within a chosen field of study, an achievement differential between native Hawaiian students and students of other ethnicities?

- To what extent do Pell grants and double majoring affect the academic performance of native Hawaiian students?

- Does there exist a wage differential between native Hawaiians and graduates of other ethnicities?
Achievement and wage gaps

- Black-white differences in academic attainment, occupation, and earnings (Clotfelter et al 2009; Hanushek and Rivkin 2009)

- White-Hispanic differential (Bali and Alvarez 2004)

- Indigenous and non-indigenous student performance at school and labor market
  - American Indian and Alaska Native (NCES 2008, 2005)
  - Aboriginal people in Canada (Gee and Sharpe 2012; Richards et al 2010; George and Kuhn 1994)
What do we know about the academic success and labor market performance of native Hawaiians?

The achievement gap in K-12 test scores:

- Lowest test scores in Hawaii public schools compared to all other major ethnic groups (Kanaiaupuni and Ishibashi 2003)

- Test scores in both reading and math lag behind the state average by approximately 10 points (Kanaiaupuni et al 2005; Kamehameha schools 2009; Johansen 2012)

- Higher poverty rates but no differences in income distribution (Naya 2007)
Causes of achievement gaps

- Socio-economic background
  (Krueger, Rothstein, & Turner 2005; Mayer 1997; Phillips et al. 1998)

- School quality and school resources
  (Fryer & Levitt 2004; Cook & Ewans 2000; Hanushek & Rivkin 2006; Krueger 2003)

- Student self-esteem and motivation
  (Van Laar and Sidanius 2001)

- Variations across and within population subgroups:
  (Kanaiaupuni et al. 2005)
  - regional differences
  - differences across private, charter, and public schools
Limitations of existing research on native Hawaiian students:

- K-12 student performance
- Descriptive statistics rather than the analysis that accounts for the effects of other factors

Little is known about:

- College performance
- Labor market outcomes
- Factors that affect both the academic and labor market outcomes of native Hawaiians
Data

- Sources: Hawaii P-20 Partnerships for Education, the University of Hawaii Institutional Research Office, the Department of Labor and Industrial Relations

- Individual level student data on all UHS *graduates* between 2004-2011
  - Basic demographic information, enrollment-graduation dates, concentration fields, majors, scholarship status, degree granting institution, GPA at graduation
  - Labor market outcomes (wages, industry code)
  - Data on pre-college achievements (SAT, HS course grades)
  - Limited data on family background characteristics (free/reduced lunch, zip code of the first mailing address)

- Limitations:
  - No data on students who dropped out
  - Wage records are limited to Hawaii
Sample composition by highest degree

<table>
<thead>
<tr>
<th>Sample age 15-25</th>
<th>22,234</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate</td>
<td>8.0%</td>
</tr>
<tr>
<td>Associate</td>
<td>31.9%</td>
</tr>
<tr>
<td>Bachelor</td>
<td>60.1%</td>
</tr>
<tr>
<td>Native Hawaiians</td>
<td>15.1%</td>
</tr>
<tr>
<td>Pell grant (ever)</td>
<td>19.0%</td>
</tr>
<tr>
<td>Double major</td>
<td>5.7%</td>
</tr>
<tr>
<td>(for highest degree)</td>
<td></td>
</tr>
<tr>
<td>Work at the time of graduation</td>
<td>44.6%</td>
</tr>
</tbody>
</table>

Note: The sample is limited to recipients of undergraduate degree age 15-25, who were matched to at least one wage record before, at, or after graduation.
Performance of Native Hawaiians

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Differences-in-means
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Results

Analysis: WAGE
Differences-in-means
Model

Distribution of GPA by sample

Age 15-25 (22,234)

Mean cum. GPA non-Hawaiian = 3.11
Mean cum. GPA Hawaiian = 3.06
Difference = 0.05**

Note: ** significant at 1%. The sample excludes graduate degree and post-baccalaureate degree recipients.
### Differences in mean cumulative GPA

<table>
<thead>
<tr>
<th></th>
<th>Difference</th>
<th>Std.Err.</th>
<th># obs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>0.06**</td>
<td>(0.01)</td>
<td>12,829</td>
</tr>
<tr>
<td>Male</td>
<td>0.04**</td>
<td>(0.01)</td>
<td>9,326</td>
</tr>
<tr>
<td>Certificate</td>
<td>-0.05</td>
<td>(0.03)</td>
<td>1,777</td>
</tr>
<tr>
<td>Associate</td>
<td>0.04**</td>
<td>(0.01)</td>
<td>7,099</td>
</tr>
<tr>
<td>Bachelor</td>
<td>0.03*</td>
<td>(0.01)</td>
<td>13,352</td>
</tr>
<tr>
<td>Pell grant (ever)</td>
<td>0.06**</td>
<td>(0.02)</td>
<td>4,218</td>
</tr>
<tr>
<td>Double major (for highest degree)</td>
<td>0.07+</td>
<td>(0.04)</td>
<td>1,271</td>
</tr>
<tr>
<td>Work at the time of graduation</td>
<td>0.06**</td>
<td>(0.01)</td>
<td>9,908</td>
</tr>
</tbody>
</table>

*Note:* Restricted to ages 15–25 undergraduate degree recipients. Difference is calculated as (non-Hawaiians)-(Hawaiians)

** significant at 1%, * at 5%, + at 10%; an imposed assumption of the unequal variance across ethnic groups.
Model

Model 1:
\[ Y_i = \beta_0 + \beta_1 \text{HAWAIIAN}_i + \alpha X_i + \lambda Z_i + \gamma_c + \tau_t + \varepsilon_i \]

Model 2:
\[ Y_i = \beta_0 + \beta_1 \text{HAWAIIAN}_i + \alpha X_i + \lambda Z_i + \delta \text{HAWAIIAN}_i \times Z_i + \gamma_c + \tau_t + \varepsilon_i \]

where \( i \) indexes individuals; \( t \)-graduation year (\( t = 2003, ..., 2011 \)); \( c \)-campus

\( Y \) is the cumulative GPA for the highest degree earned
\( X \) includes gender, age at graduation, credit hours earned, degree, field of study
\( Z \) Pell grant status, double major and work indicators
\text{HAWAIIAN} indicator for native Hawaiian or part-Hawaiian
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**Distribution of wage by degree**

**Age at graduation is 25 or younger**

<table>
<thead>
<tr>
<th>Degree</th>
<th>Mean WAGE non-Hawaiian</th>
<th>Mean WAGE Hawaiian</th>
<th>Difference</th>
<th>Number of person-year-quarter obs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associate</td>
<td>$6,444 (36058) [4,394]</td>
<td>$6,294 (7651) [983]</td>
<td>$150**</td>
<td>43,709</td>
</tr>
<tr>
<td>Bachelor</td>
<td>$8,090 (69621) [9,001]</td>
<td>$7,410 (8058) [1,052]</td>
<td>$680**</td>
<td>77,679</td>
</tr>
</tbody>
</table>

**Note:** ** significant at 1%, * significant at 5%. In addition to age restriction, the sample is limited to individuals who reported a unique 2-digit NAICS code in a given quarter-year. The sample includes person-year-quarter records from date of graduation and on. Number of person-year-quarter observations is in parentheses; number of persons in square brackets.
Model

Stage 1:
\[ \text{GPA}_i = \beta_0 + \beta_1 \text{HAWAIIAN}_i + \alpha X_{1i} + \lambda Z_{1i} + \gamma_c + \tau_t + \varepsilon_i \]

where \( i \) indexes individuals; \( t \)-year (\( t = 2003, \ldots, 2011 \)); \( c \)-campus
\( X_1 \): gender, age at graduation, hours earned, degree, field of study
\( Z_1 \): SAT scores, Pell status, double major, work status at graduation

Stage 2:
\[ \text{WAGE}_{itq} = \beta_0 + \beta_1 \text{HAWAIIAN}_i + \alpha X_{2i} + \lambda Z_{2i} + \delta \hat{\text{GPA}}_i + \tau_{tq} + \varepsilon_{itq} \]

where \( i \) indexes individuals; \( t \)-year (\( t = 2006, \ldots, 2010 \)); \( q \)-quarter; \( c \)-campus
\( X_2 \): gender, age, age squared, degree, field of study
\( Z_2 \): double major, industry indicators
\( \hat{\text{GPA}} \): predicted GPA