datahack_geomap

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2025-05-27

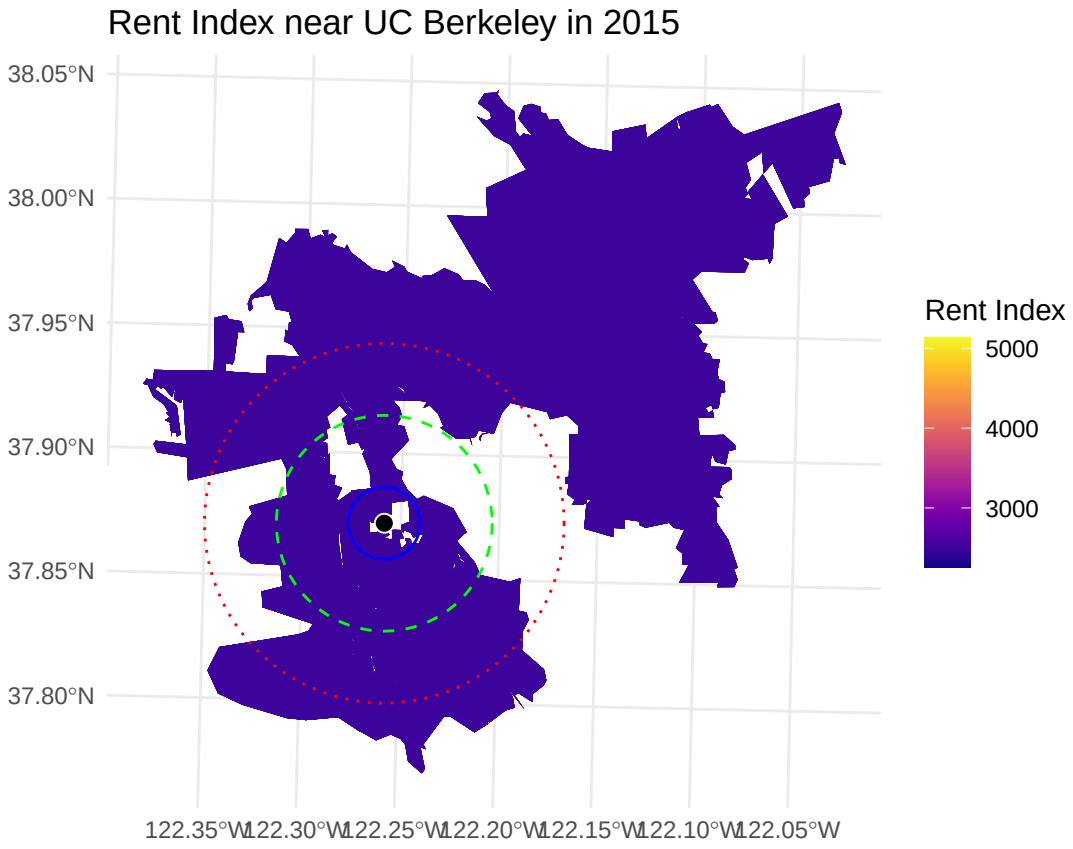
Load Dataset

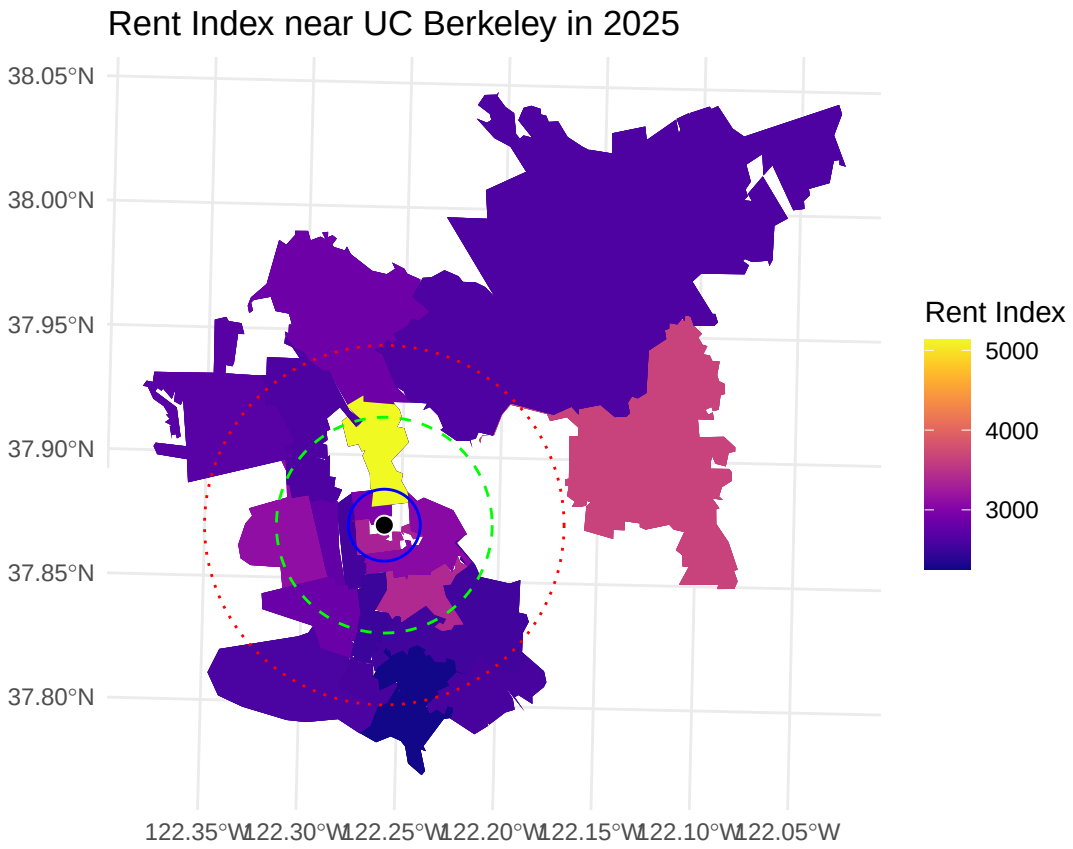
```
options(tigris_use_cache = TRUE)

# Load rent data
rent_data <- read_csv("clean_california_zillow_rent.csv") %>%
  filter(!is.na(RentIndex)) %>%
  mutate(RegionName = str_pad(as.character(ZIPCode), 5, pad = "0"))

# Download and simplify ZIP shapes (for CA ZIPs)
zips_needed <- unique(rent_data$RegionName)
zip_shapes <- zctas(cb = FALSE, starts_with = "9") |>
  filter(ZCTA5CE20 %in% zips_needed) |>
  st_transform(3310) |>
  st_simplify(dTolerance = 100)  # Simplify to reduce memory

# Join rent data
rent_sf <- left_join(zip_shapes, rent_data, by = c("ZCTA5CE20" = "RegionName"))

# UC campuses
uc_campuses <- tribble(
  ~Campus,               ~Longitude, ~Latitude,
  "UC Berkeley",         -122.2585,   37.8719,
  "UC Davis",            -121.7446,   38.5382,
  "UC Irvine",           -117.8443,   33.6405,
  "UCLA",                -118.4452,   34.0689,
  "UC Merced",           -120.4189,   37.3649,
  "UC Riverside",        -117.3281,   33.9737,
  "UC San Diego",        -117.2394,   32.8801,
  "UC San Francisco",    -122.4580,   37.7631,
  "UC Santa Barbara",    -119.8489,   34.4139,
  "UC Santa Cruz",       -122.0622,   36.9916
)

uc_sf <- st_as_sf(uc_campuses, coords = c("Longitude", "Latitude"), crs = 4326) |>
  st_transform(3310)
```

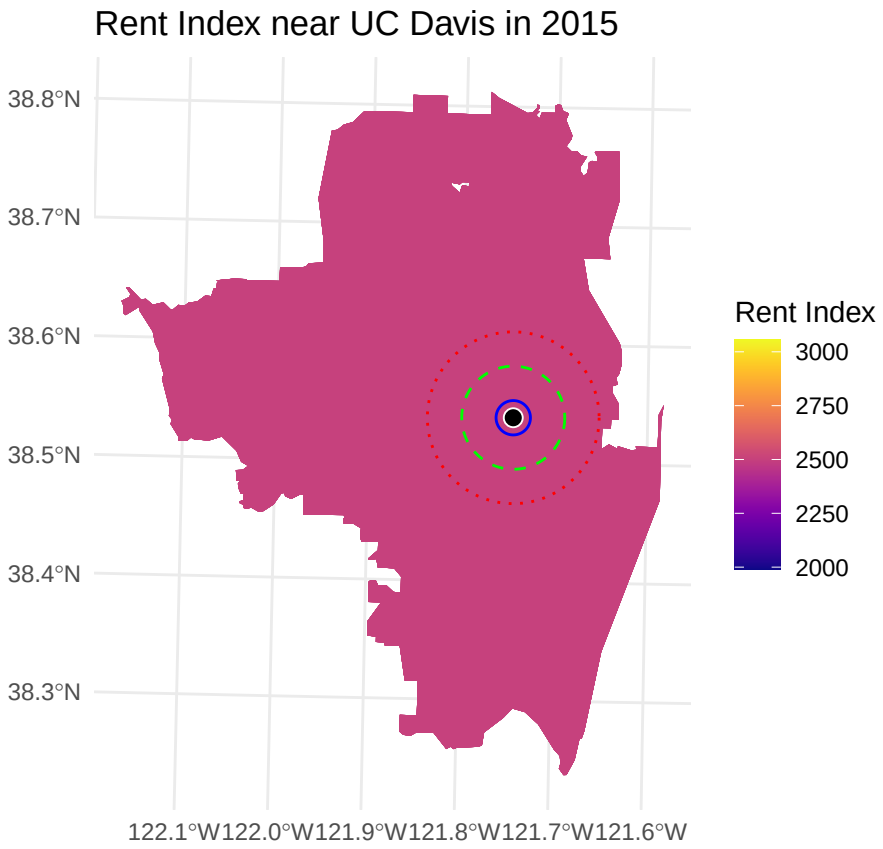
Extra

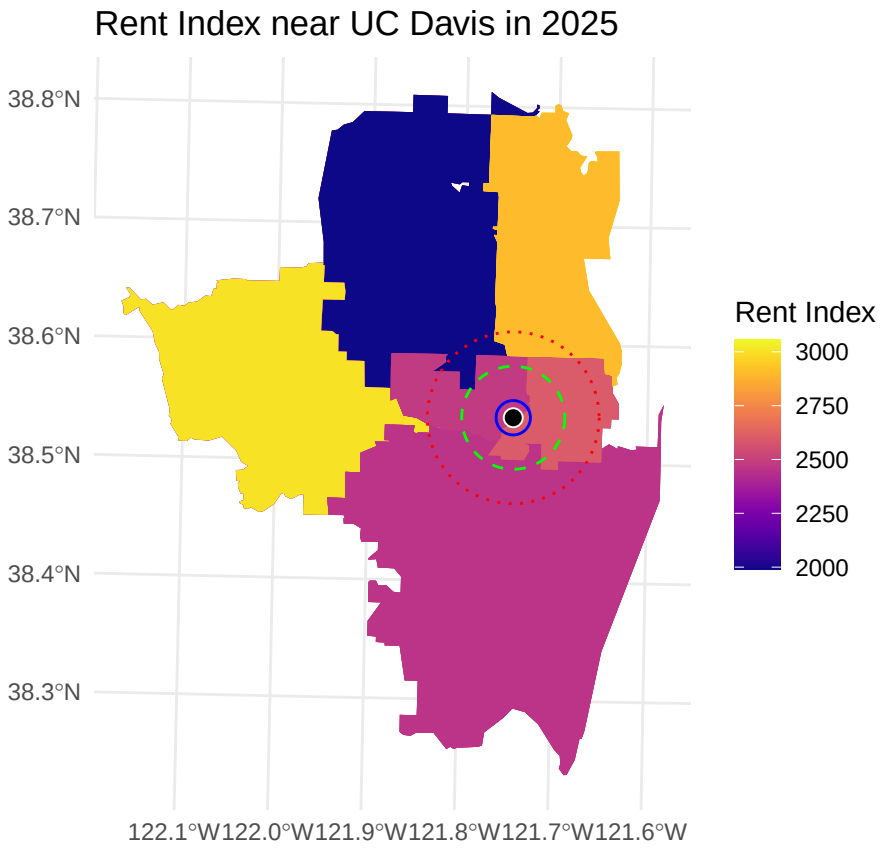
```r
# Extract year
rent_data <- rent_data %>%
  filter(!is.na(RentIndex)) %>%
  mutate(RegionName = str_pad(as.character(ZIPCode), 5, pad = "0"),
         Year = lubridate::year(as.Date(Date)))

# Separate datasets
rent_2015 <- rent_data %>% filter(Year == 2015)
rent_2025 <- rent_data %>% filter(Year == 2025)

# Join ZIPs with rent data
rent_sf_2015 <- left_join(zip_shapes, rent_2015, by = c("ZCTA5CE20" = "RegionName"))
rent_sf_2025 <- left_join(zip_shapes, rent_2025, by = c("ZCTA5CE20" = "RegionName"))

for (i in 1:nrow(uc_sf)) {
  campus_name <- uc_sf$Campus[i]
  campus_pt <- uc_sf[i, ]

  # Buffers
  buffer_1 <- st_buffer(campus_pt, 1609)
  buffer_3 <- st_buffer(campus_pt, 1609 * 3)
  buffer_5 <- st_buffer(campus_pt, 1609 * 5)

  # Nearby ZIPs
  zip_2015 <- rent_sf_2015[st_intersects(rent_sf_2015, buffer_5, sparse = FALSE), ]
  zip_2025 <- rent_sf_2025[st_intersects(rent_sf_2025, buffer_5, sparse = FALSE), ]

  # Campus-specific scale
  campus_min <- min(c(zip_2015$RentIndex, zip_2025$RentIndex), na.rm = TRUE)
  campus_max <- max(c(zip_2015$RentIndex, zip_2025$RentIndex), na.rm = TRUE)

  for (year in c(2015, 2025)) {
    zip_year <- if (year == 2015) zip_2015 else zip_2025

    p <- ggplot() +
      geom_sf(data = zip_year, aes(fill = RentIndex), color = NA) +
      scale_fill_viridis(
        option = "plasma",
        name = "Rent Index",
        limits = c(campus_min, campus_max),
        na.value = "grey90"
      ) +
      geom_sf(data = buffer_5, fill = NA, color = "red", linetype = "dotted", linewidth = 0.5) +
      geom_sf(data = buffer_3, fill = NA, color = "green", linetype = "dashed", linewidth = 0.5) +
      geom_sf(data = buffer_1, fill = NA, color = "blue", linetype = "solid", linewidth = 0.5) +
      geom_sf(data = campus_pt, shape = 21, fill = "black", color = "white", size = 3) +
      labs(title = paste0("Rent Index near ", campus_name, " in ", year)) +
      theme_minimal()

    print(p)
  }
```

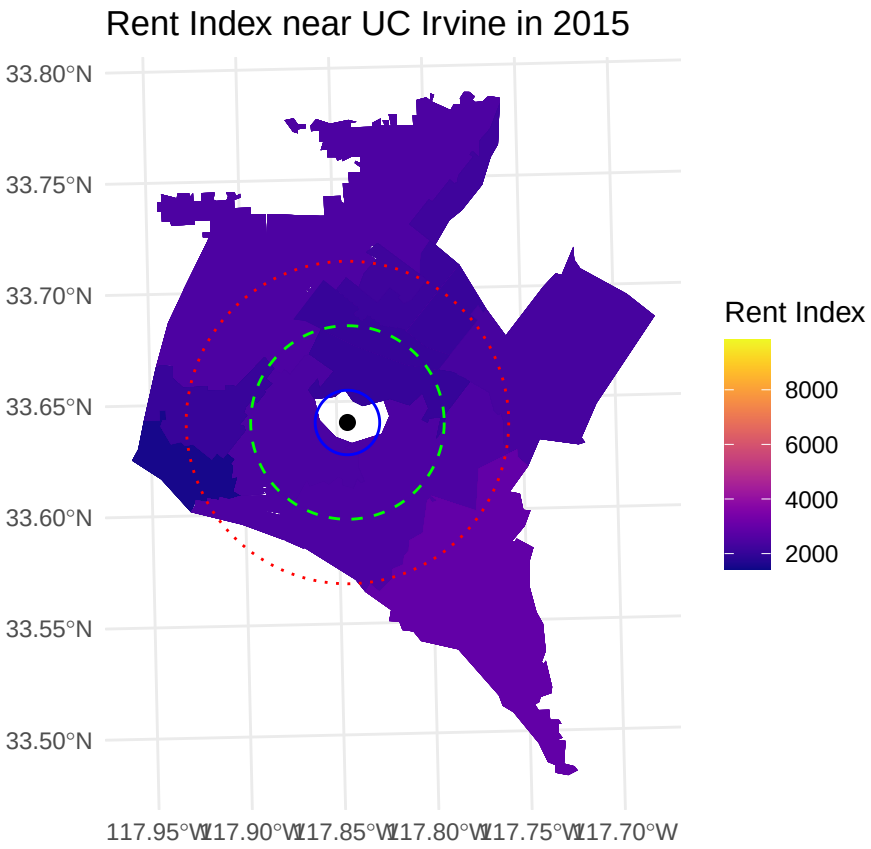
```
}
```

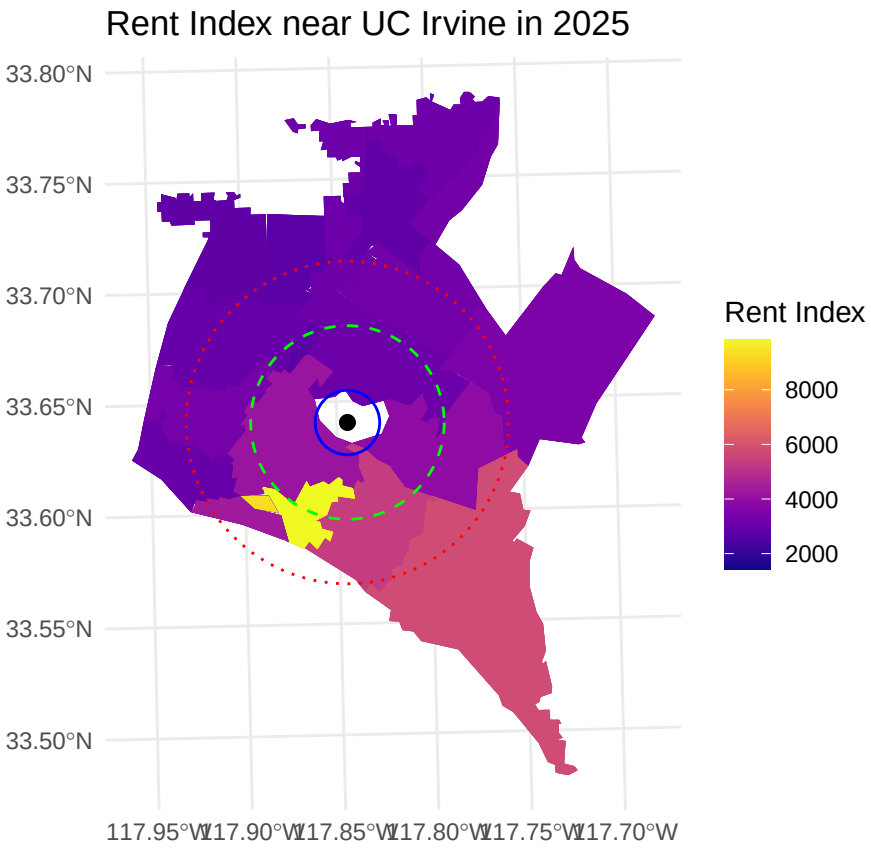

Rent Index near UC Berkeley in 2015
38.05°N
38.00°N
37.95°N
37.90°N
37.85°N
37.80°N
122.35°W
122.30°W
122.25°W
122.20°W
122.15°W
122.10°W
122.05°W
Rent Index
5000
4000
3000

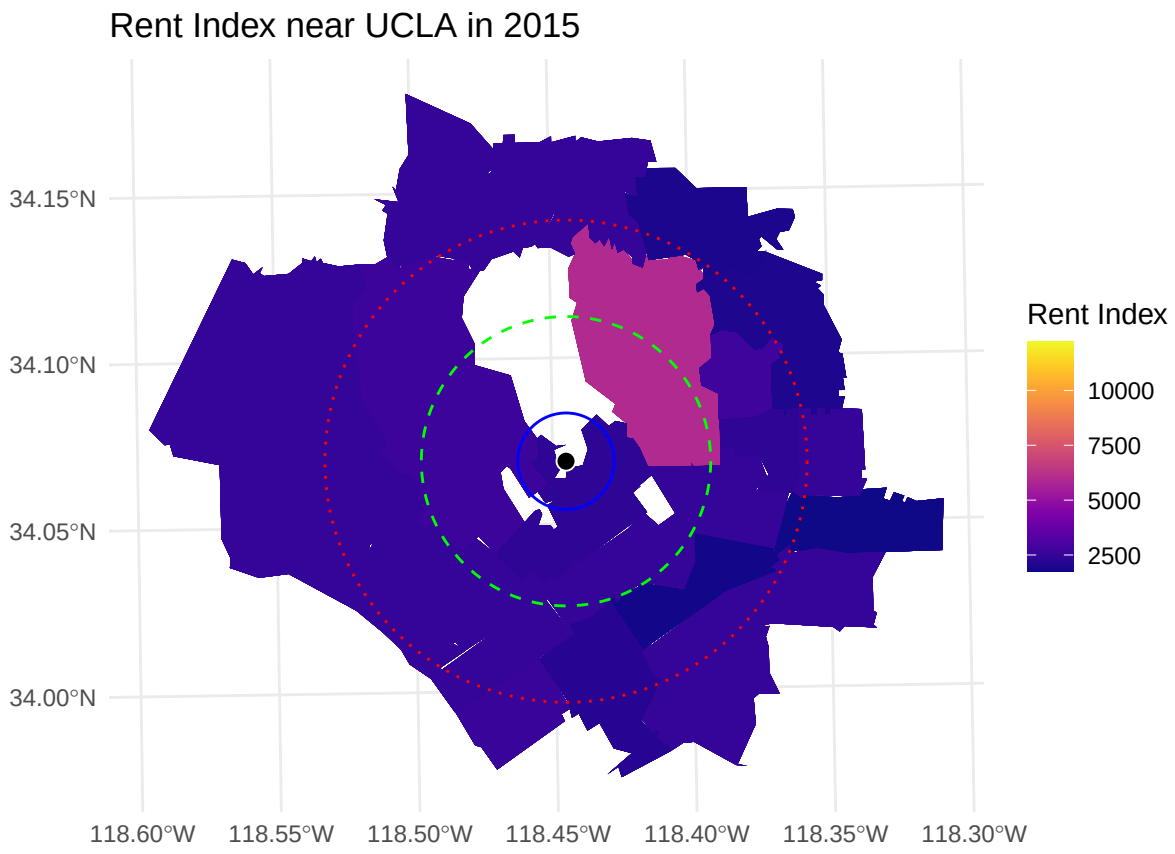

Rent Index near UC Berkeley in 2025
38.05°N
38.00°N
37.95°N
37.90°N
37.85°N
37.80°N
122.35°W
122.30°W
122.25°W
122.20°W
122.15°W
122.10°W
122.05°W
Rent Index
5000
4000
3000

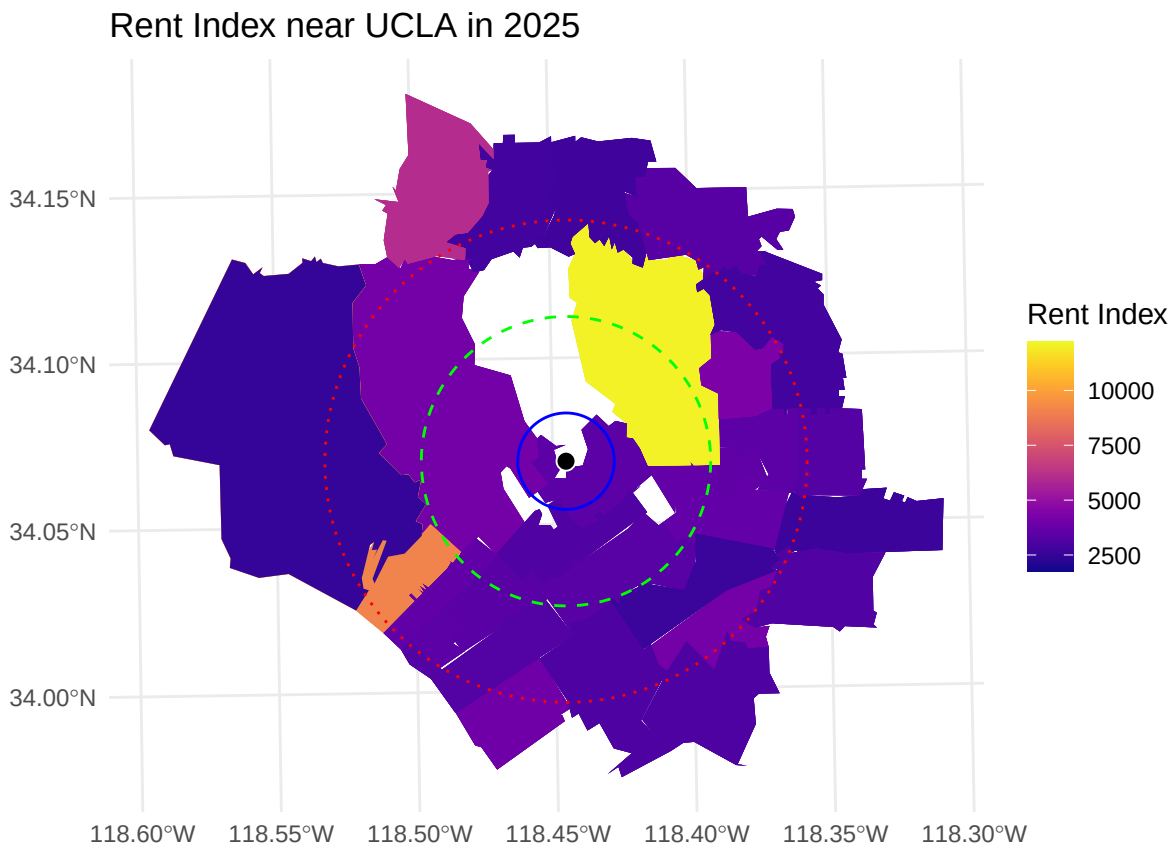

Rent Index near UC Davis in 2015
38.8°N
38.7°N
38.6°N
38.5°N
38.4°N
38.3°N
122.1°W122.0°W121.9°W121.8°W121.7°W121.6°W
Rent Index
3000
2750
2500
2250
2000

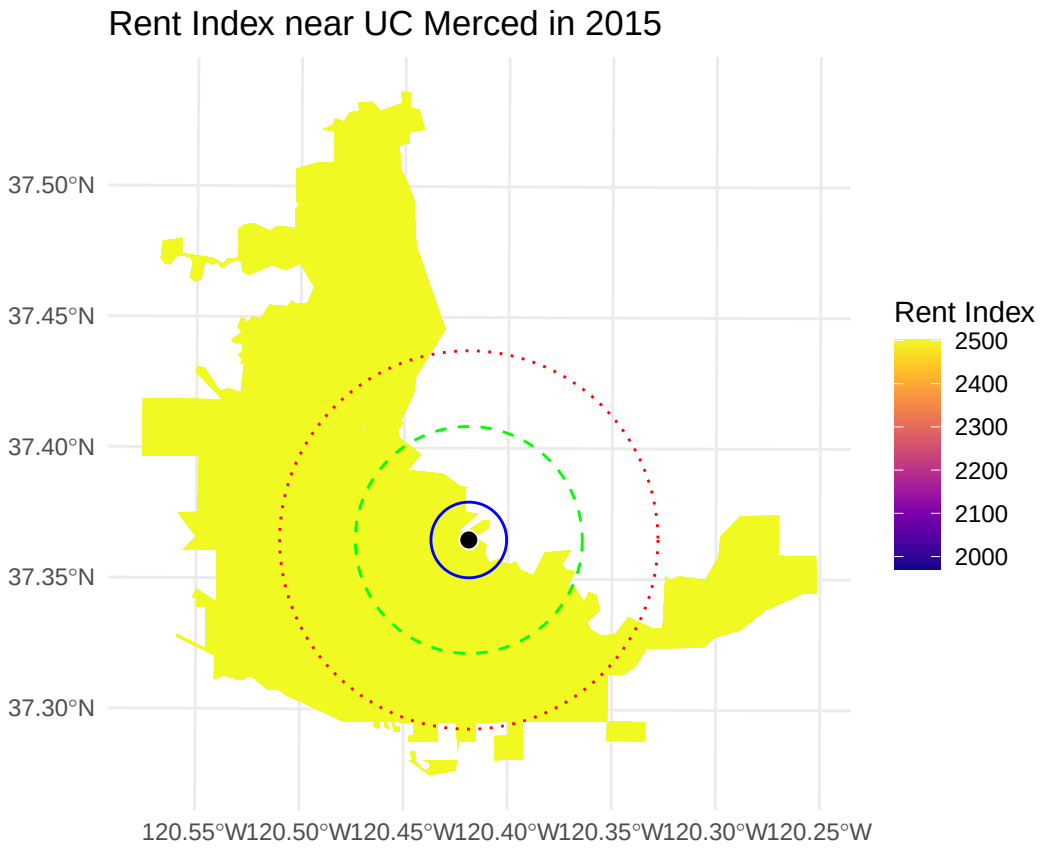

Rent Index near UC Davis in 2025
38.8°N
38.7°N
38.6°N
38.5°N
38.4°N
38.3°N
122.1°W
122.0°W
121.9°W
121.8°W
121.7°W
121.6°W
Rent Index
3000
2750
2500
2250
2000

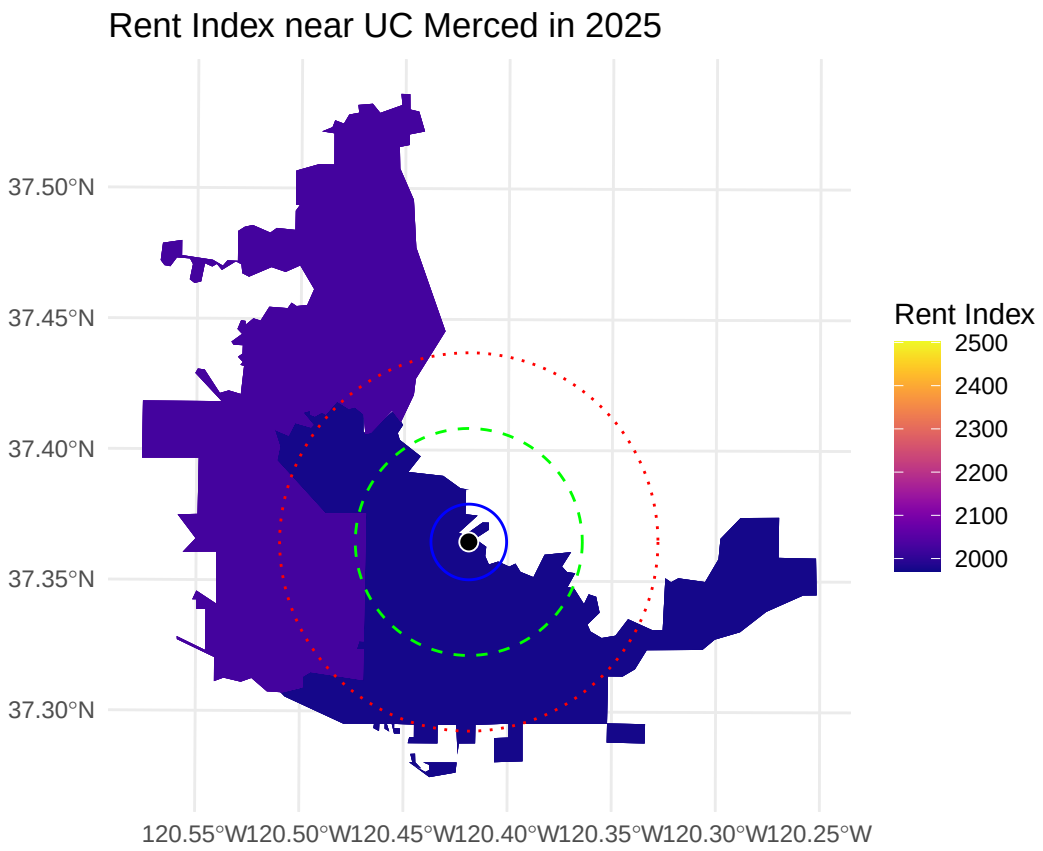

Rent Index near UC Irvine in 2015
33.80°N
33.75°N
33.70°N
33.65°N
33.60°N
33.55°N
33.50°N
117.95°W
117.90°W
117.85°W
117.80°W
117.75°W
117.70°W
Rent Index
8000
6000
4000
2000

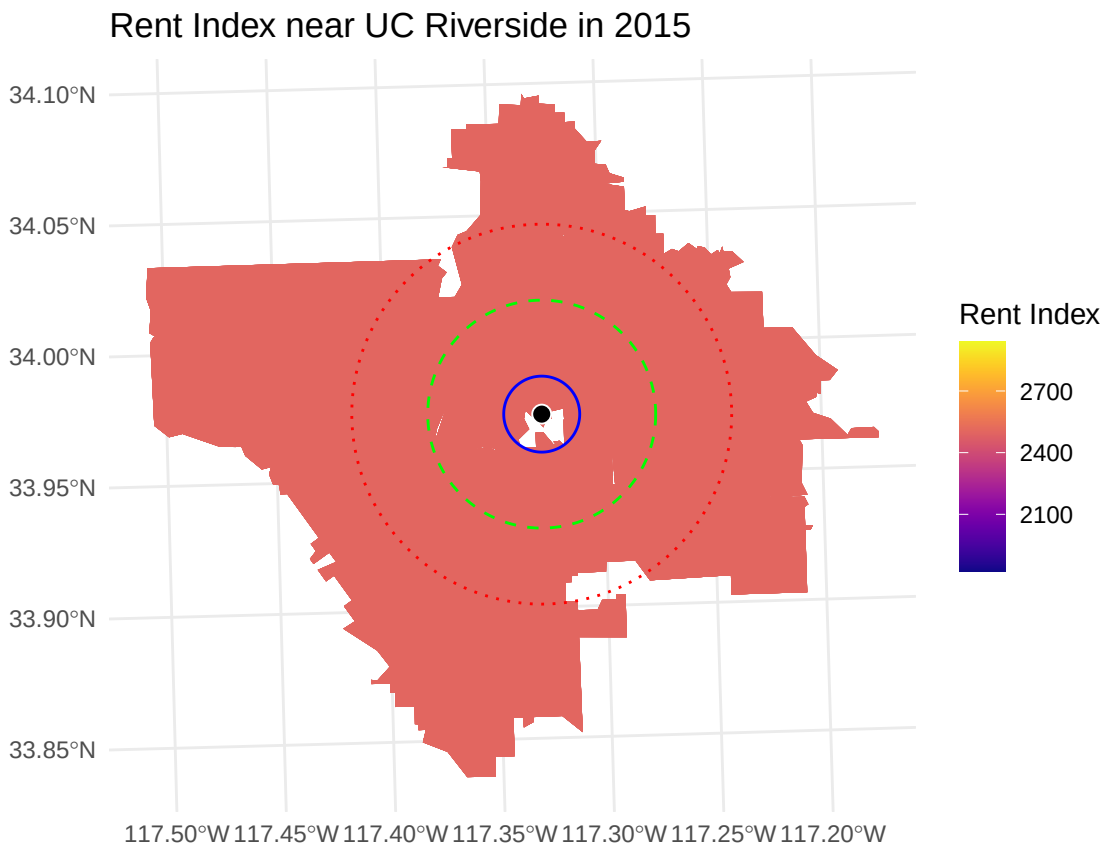

Rent Index near UC Irvine in 2025
33.80°N
33.75°N
33.70°N
33.65°N
33.60°N
33.55°N
33.50°N
117.95°W
117.90°W
117.85°W
117.80°W
117.75°W
117.70°W
Rent Index
8000
6000
4000
2000

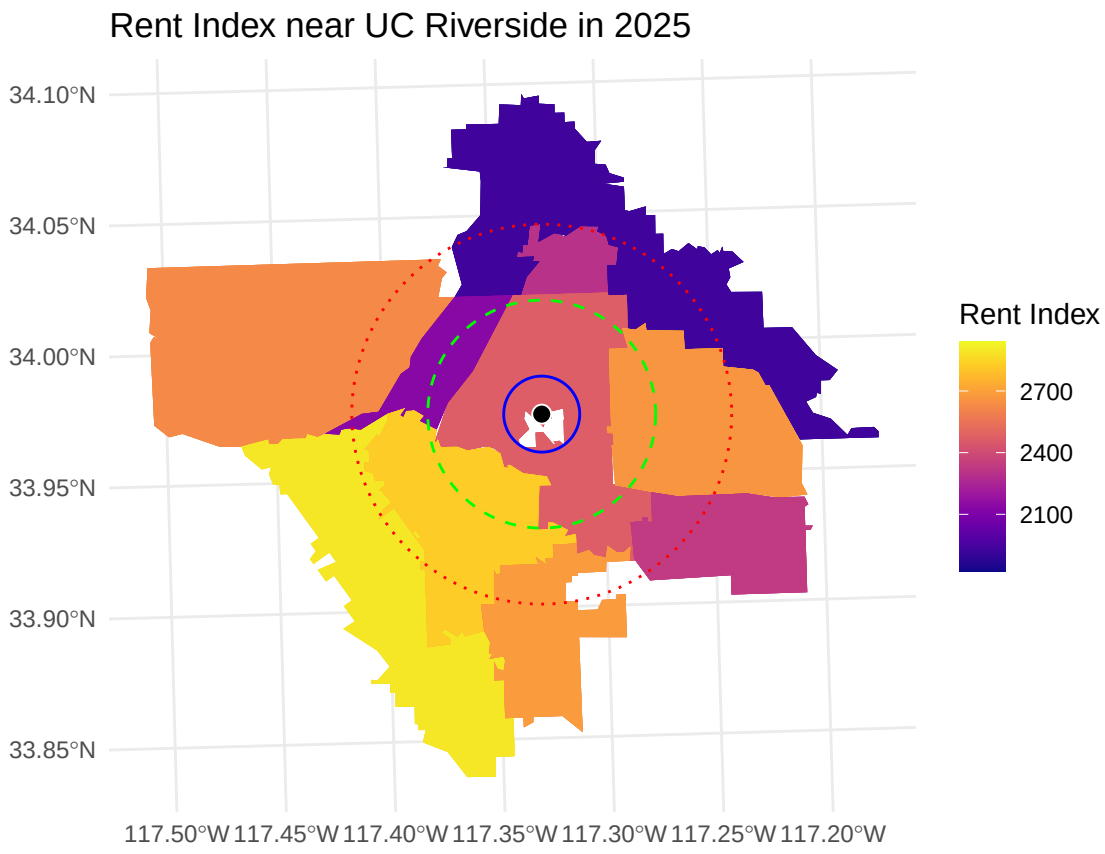

Rent Index near UCLA in 2015
34.15°N
34.10°N
34.05°N
34.00°N
118.60°W
118.55°W
118.50°W
118.45°W
118.40°W
118.35°W
118.30°W
Rent Index
10000
7500
5000
2500

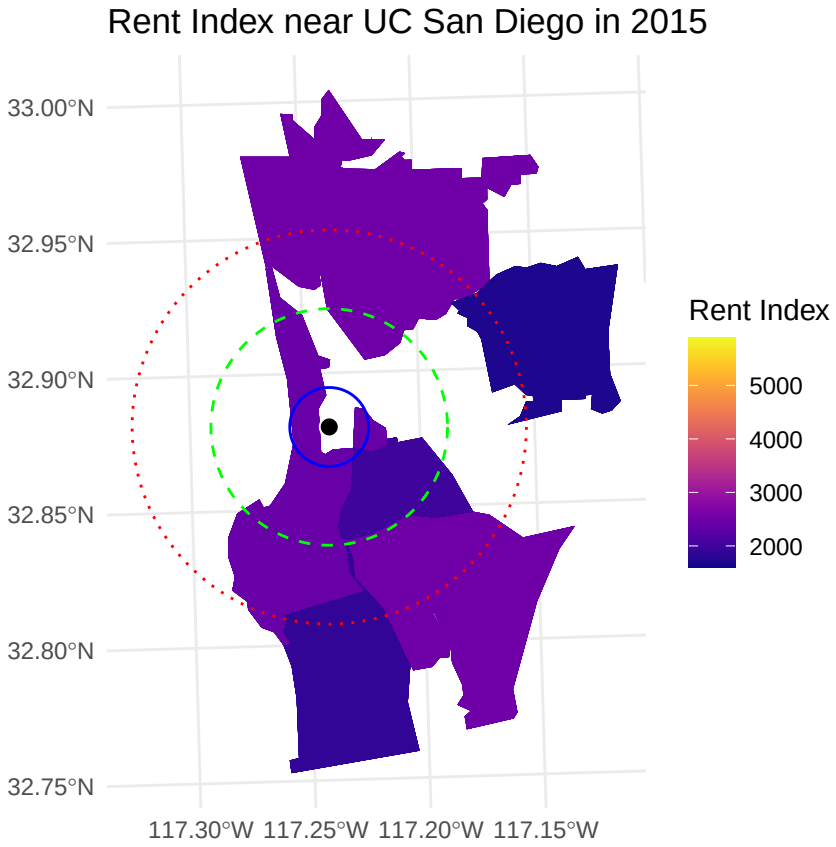

Rent Index near UCLA in 2025
34.15°N
34.10°N
34.05°N
34.00°N
118.60°W
118.55°W
118.50°W
118.45°W
118.40°W
118.35°W
118.30°W
Rent Index
10000
7500
5000
2500

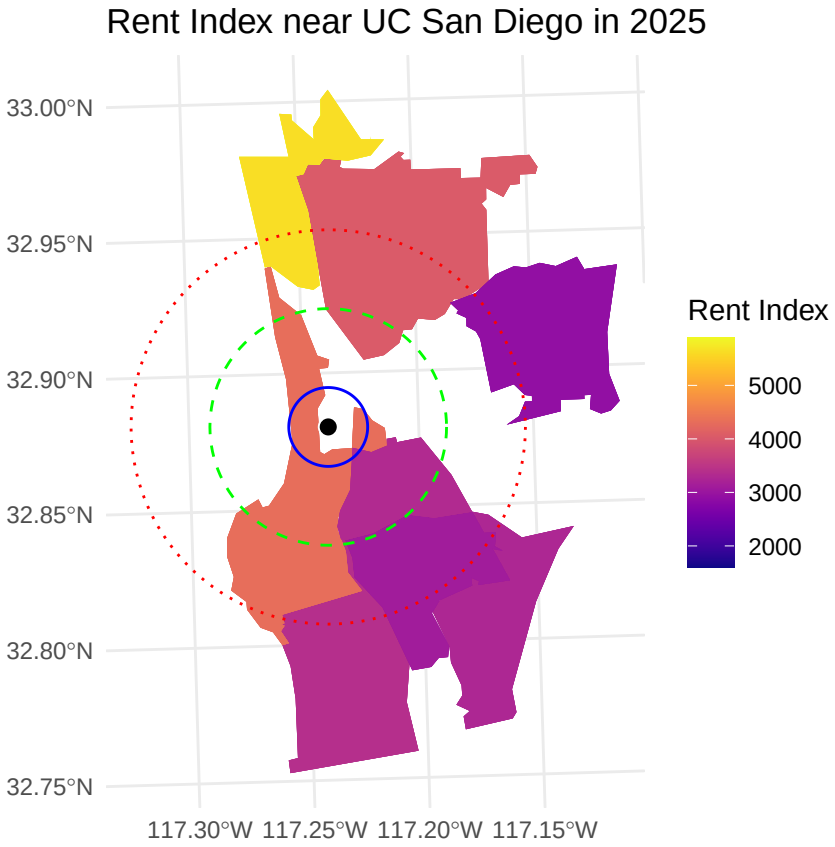

Rent Index near UC Merced in 2015
37.50°N
37.45°N
37.40°N
37.35°N
37.30°N
120.55°W120.50°W120.45°W120.40°W120.35°W120.30°W120.25°W
Rent Index
2500
2400
2300
2200
2100
2000

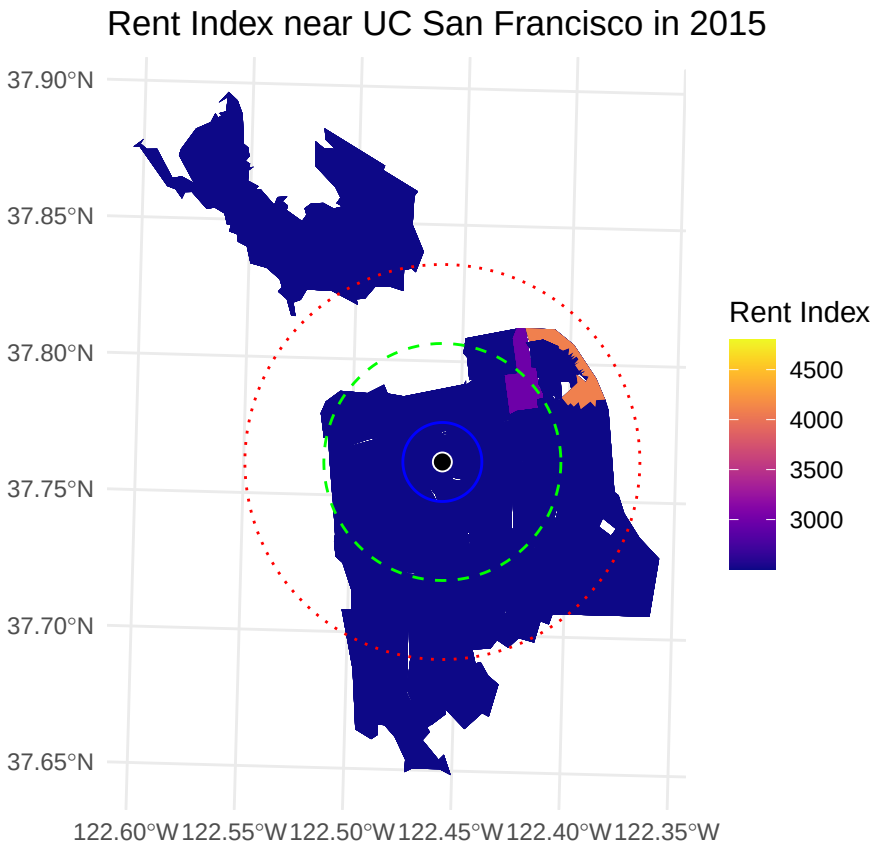

Rent Index near UC Merced in 2025
37.50°N
37.45°N
37.40°N
37.35°N
37.30°N
120.55°W120.50°W120.45°W120.40°W120.35°W120.30°W120.25°W
Rent Index
2500
2400
2300
2200
2100
2000

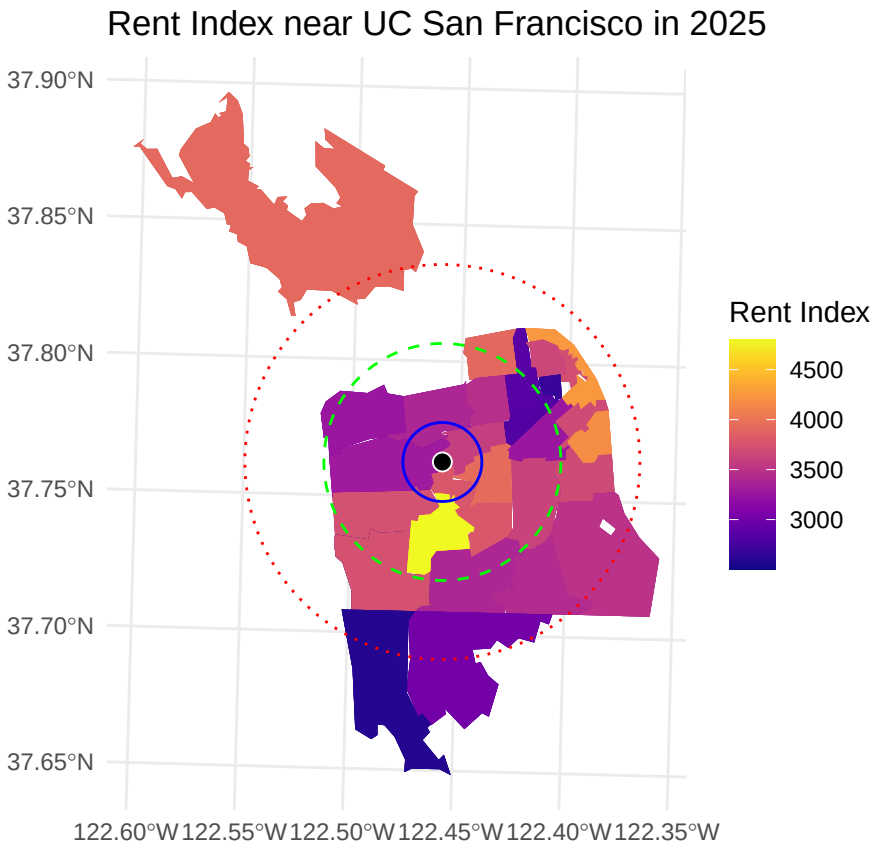

Rent Index near UC Riverside in 2015
34.10°N
34.05°N
34.00°N
33.95°N
33.90°N
33.85°N
117.50°W
117.45°W
117.40°W
117.35°W
117.30°W
117.25°W
117.20°W
Rent Index
2700
2400
2100

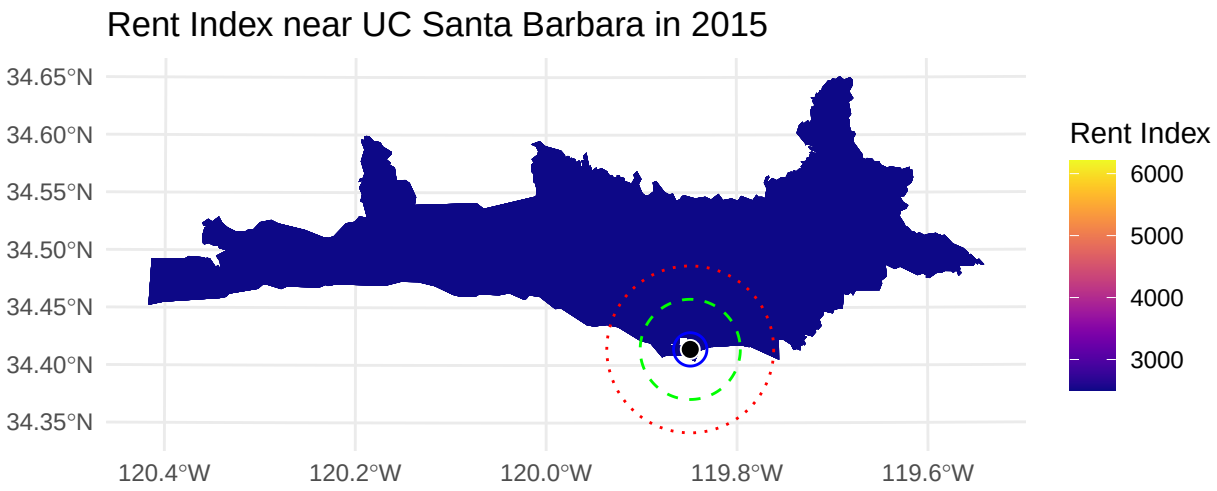

Rent Index near UC Riverside in 2025
34.10°N
34.05°N
34.00°N
33.95°N
33.90°N
33.85°N
117.50°W
117.45°W
117.40°W
117.35°W
117.30°W
117.25°W
117.20°W
Rent Index
2700
2400
2100

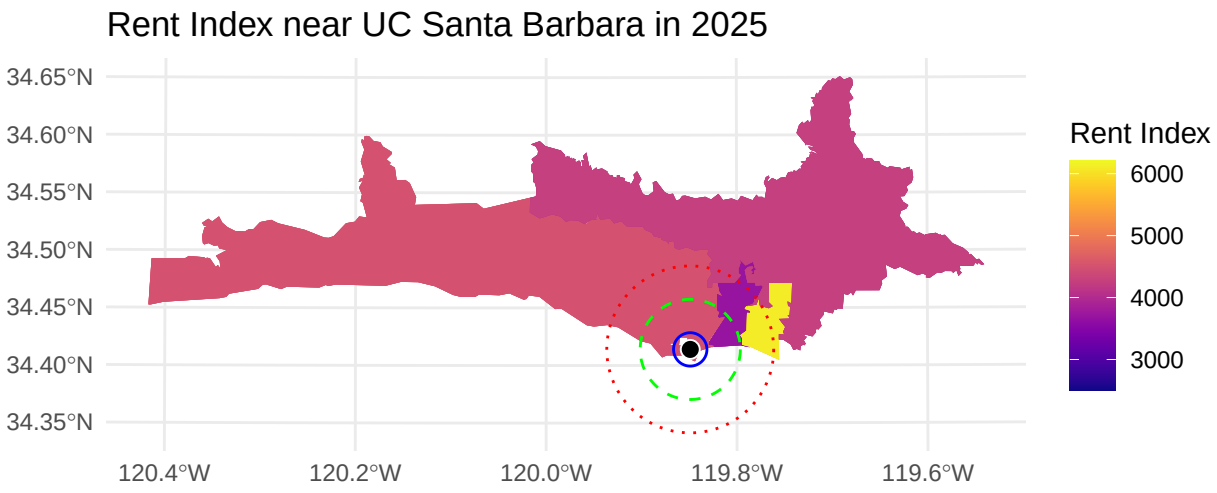

Rent Index near UC San Diego in 2015
33.00°N
32.95°N
32.90°N
32.85°N
32.80°N
32.75°N
117.30°W
117.25°W
117.20°W
117.15°W
Rent Index
5000
4000
3000
2000

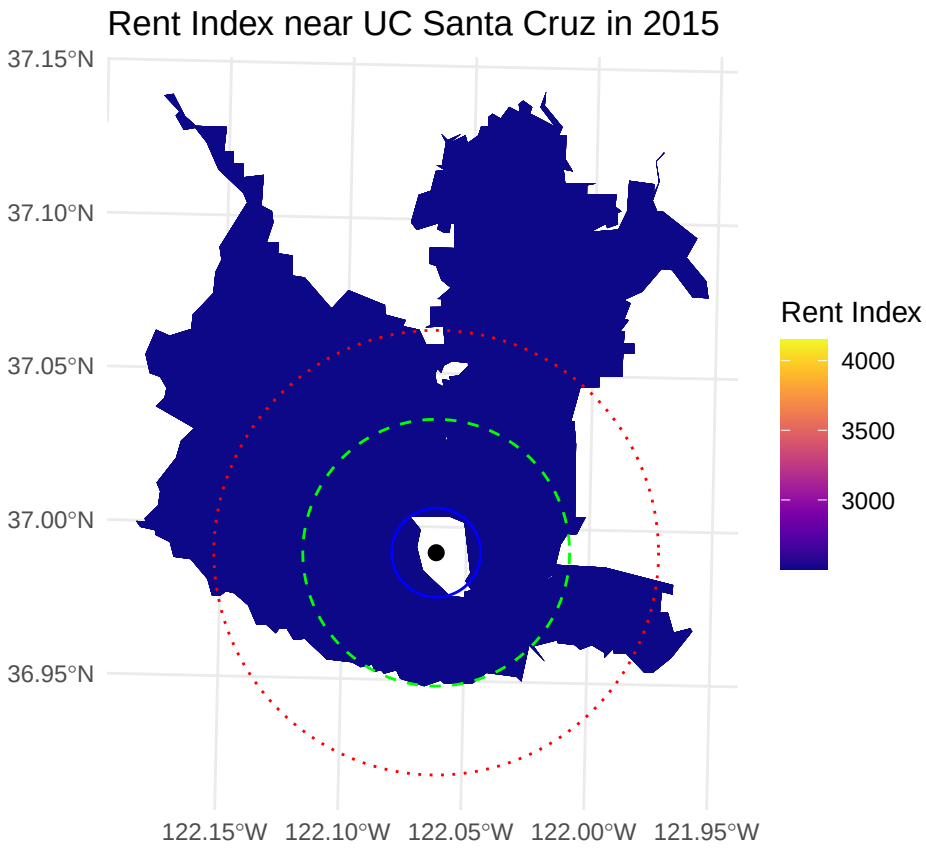

Rent Index near UC San Diego in 2025
33.00°N
32.95°N
32.90°N
32.85°N
32.80°N
32.75°N
117.30°W
117.25°W
117.20°W
117.15°W
Rent Index
5000
4000
3000
2000

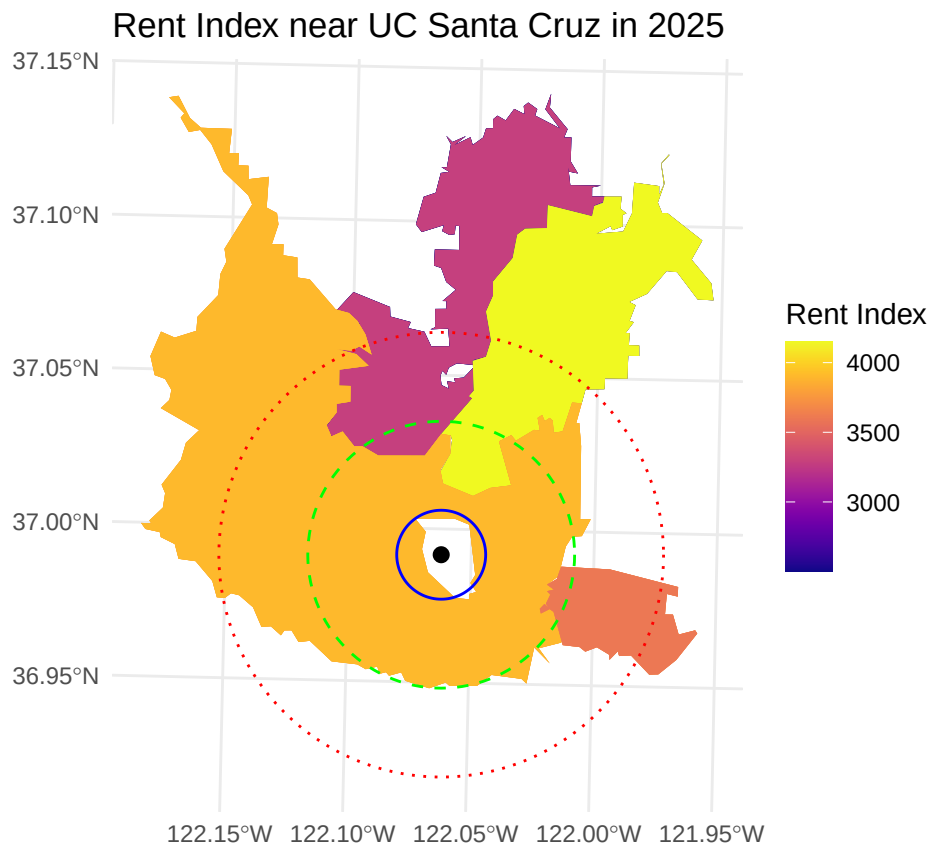

Rent Index near UC San Francisco in 2015
37.90°N
37.85°N
37.80°N
37.75°N
37.70°N
37.65°N
122.60°W
122.55°W
122.50°W
122.45°W
122.40°W
122.35°W
Rent Index
4500
4000
3500
3000


Rent Index near UC San Francisco in 2025
37.90°N
37.85°N
37.80°N
37.75°N
37.70°N
37.65°N
122.60°W
122.55°W
122.50°W
122.45°W
122.40°W
122.35°W
Rent Index
4500
4000
3500
3000


Rent Index near UC Santa Barbara in 2015
34.65°N
34.60°N
34.55°N
34.50°N
34.45°N
34.40°N
34.35°N
120.4°W
120.2°W
120.0°W
119.8°W
119.6°W
Rent Index
6000
5000
4000
3000


Rent Index near UC Santa Barbara in 2025
34.65°N
34.60°N
34.55°N
34.50°N
34.45°N
34.40°N
34.35°N
120.4°W
120.2°W
120.0°W
119.8°W
119.6°W
Rent Index
6000
5000
4000
3000


Rent Index near UC Santa Cruz in 2015
37.15°N
37.10°N
37.05°N
37.00°N
36.95°N
122.15°W
122.10°W
122.05°W
122.00°W
121.95°W
Rent Index
4000
3500
3000



Adjusted for inflation and rent increase

```
rent_data <- read_csv("clean_california_zillow_rent.csv") %>%
  filter(!is.na(RentIndex)) %>%
  mutate(ZIPCode = str_pad(as.character(ZIPCode), 5, pad = "0"))


# Step 1: Separate 2015 and 2025 data
rent_2015 <- rent_data %>%
  filter(Date == "2015-01-31") %>%
  select(ZIPCode, RentIndex_2015 = RentIndex)

rent_2025 <- rent_data %>%
  filter(Date == "2025-01-31") %>%
  select(ZIPCode, RentIndex_2025 = RentIndex)


# Step 2: Join the datasets by ZIP code
rent_joined <- inner_join(rent_2015, rent_2025, by = "ZIPCode") %>%
  mutate(
    RentIndex_2025_adj = RentIndex_2025 / (1.05 ^ 10),
    Expected_2025 = RentIndex_2015 * (1.05 ^ 10),
    Diff_vs_expected = RentIndex_2025 - Expected_2025
```

```
  )
zip_shapes <- zctas(cb = FALSE, starts_with = "9") %>%
  st_transform(3310)

# Check ZIP format
zip_shapes$ZCTA5CE20 <- as.character(zip_shapes$ZCTA5CE20)

common_zips <- intersect(unique(zip_shapes$ZCTA5CE20), unique(rent_joined$ZIPCode))
length(common_zips)
```

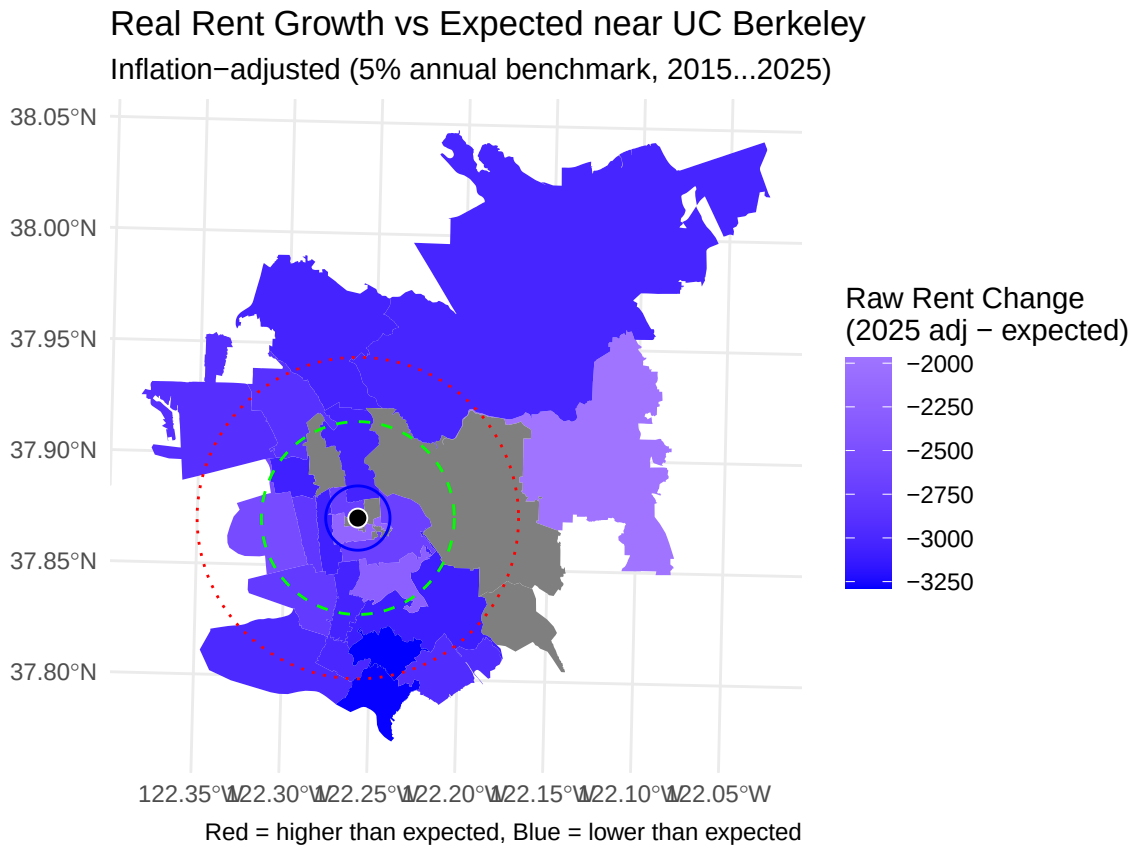
```
## [1] 898
```

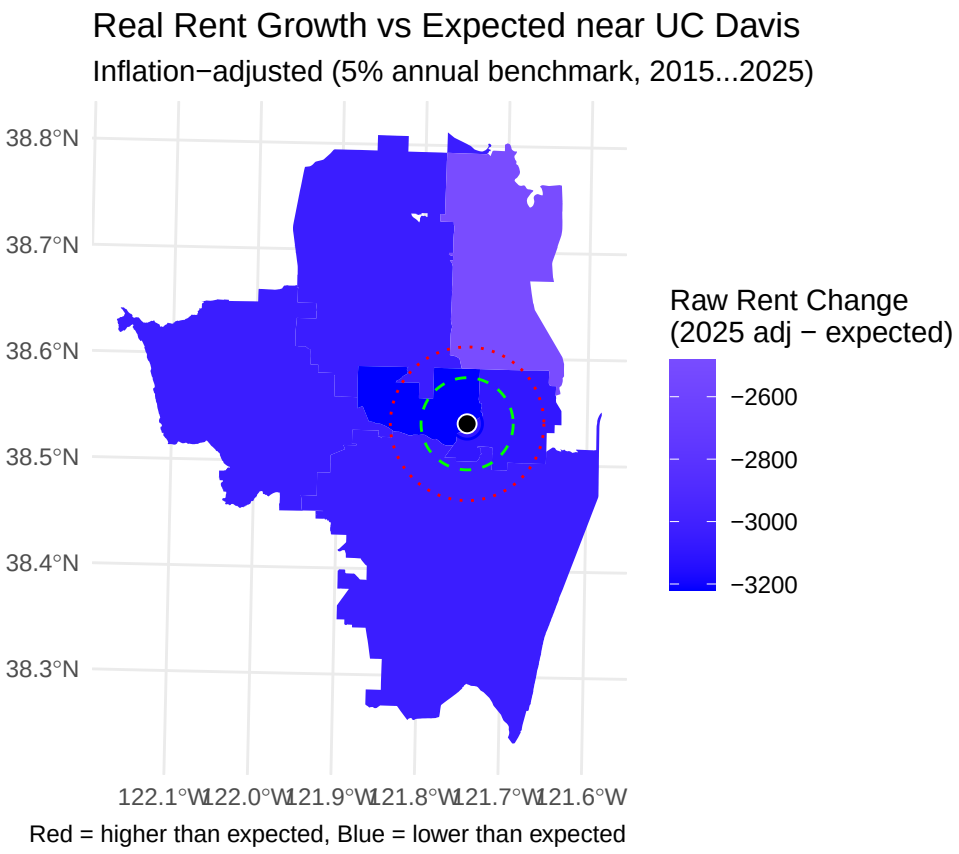
```
head(common_zips)
```

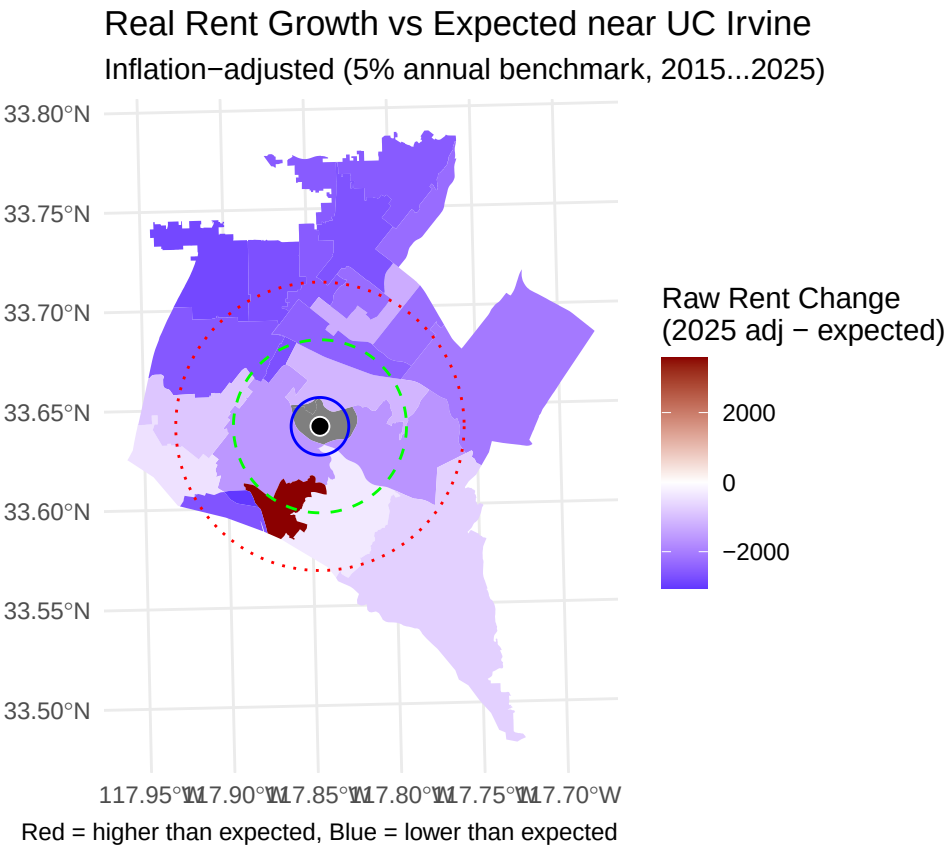
```
## [1] "94587" "95126" "90602" "95130" "95035" "92657"
```

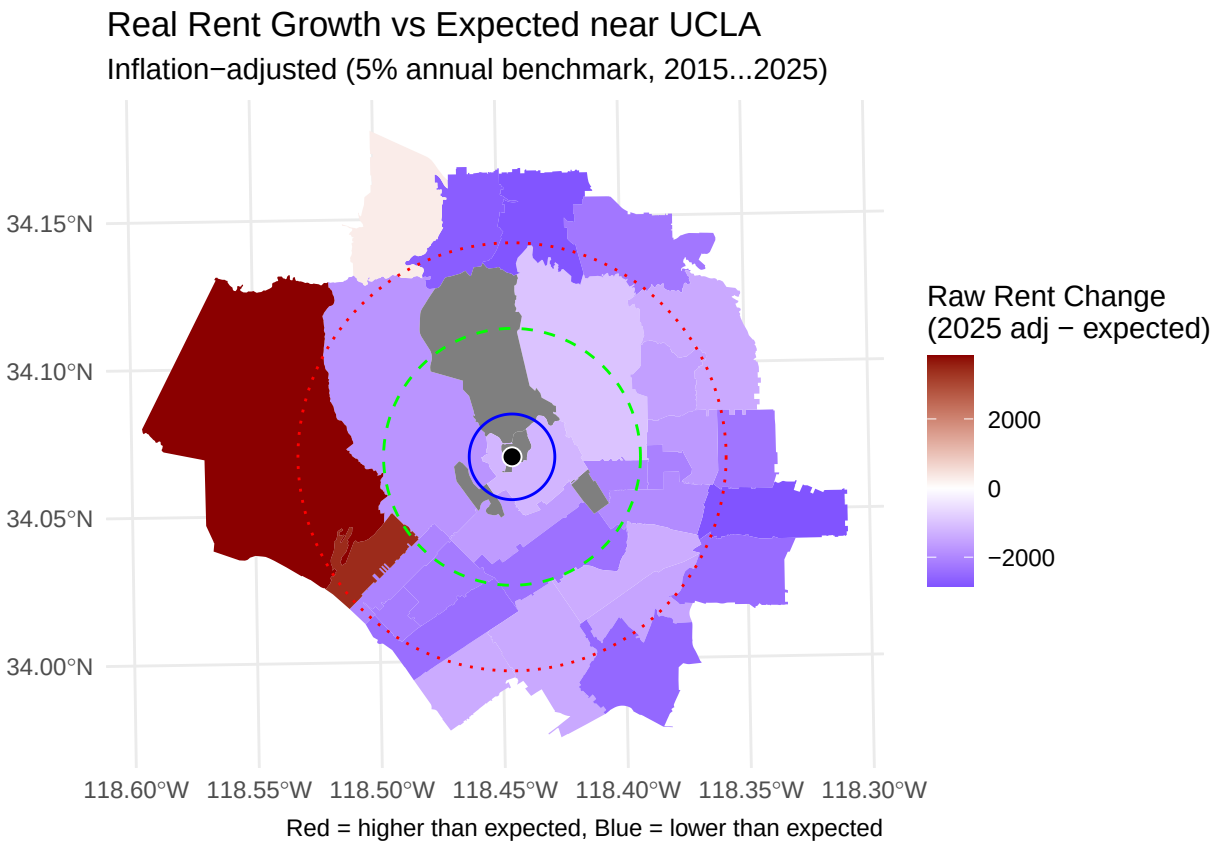
```
# Step 3: Adjust 2025 rent for inflation (CPI from BLS or estimate)
cpi_2015 <- 233.707
cpi_2025 <- 317.67
inflation_adjustment <- 1 + ((cpi_2025 - cpi_2015) / cpi_2015)
rent_joined <- rent_joined %>%
  mutate(RentIndex_2025_adj = RentIndex_2025 * inflation_adjustment)

# Step 4: Compute expected rent under 5% annual increase
years <- 2025 - 2015
growth_rate <- 0.05

rent_joined <- rent_joined %>%
  mutate(
    Expected_2025 = RentIndex_2015 * (1 + 0.05)^10 * inflation_adjustment,
    Diff_vs_expected = RentIndex_2025 - Expected_2025
  )

# Step 5: Join with spatial ZIPs
zip_shapes$ZCTA5CE20 <- as.character(zip_shapes$ZCTA5CE20)
rent_joined$ZIPCode <- as.character(rent_joined$ZIPCode)

# Join with ZIP shapefile
rent_diff_sf <- left_join(zip_shapes, rent_joined, by = c("ZCTA5CE20" = "ZIPCode"))

for (i in 1:nrow(uc_sf)) {
  campus_name <- uc_sf$Campus[i]
  campus_pt <- uc_sf[i, ]

  buffer_1 <- st_buffer(campus_pt, 1609)
  buffer_3 <- st_buffer(campus_pt, 1609 * 3)
  buffer_5 <- st_buffer(campus_pt, 1609 * 5)

  # Filter nearby ZIPs for joined inflation-adjusted data
  zip_nearby <- rent_diff_sf[st_intersects(rent_diff_sf, buffer_5, sparse = FALSE), ]

  # Plot actual vs expected difference
```

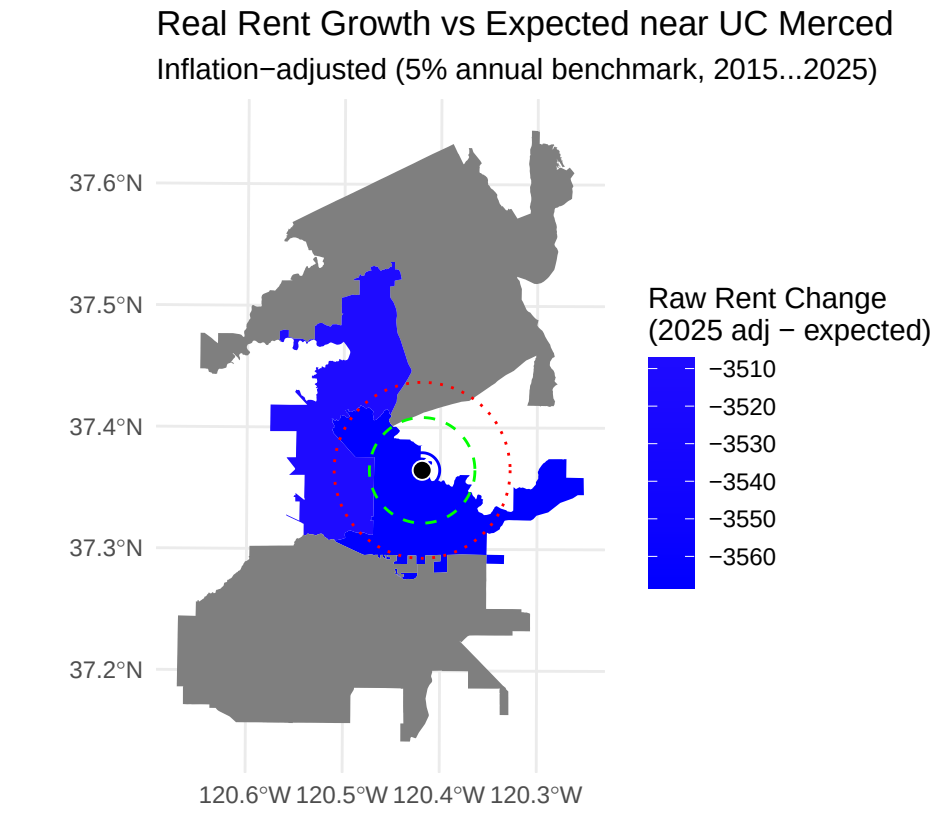
```
  p <- ggplot() +
    geom_sf(data = zip_nearby, aes(fill = Diff_vs_expected), color = NA) +
    scale_fill_gradient2(
      low = "blue", mid = "white", high = "darkred",
      midpoint = 0, name = "Raw Rent Change\n(2025 adj - expected)"
    ) +
    geom_sf(data = buffer_5, fill = NA, color = "red", linetype = "dotted", linewidth = 0.5) +
    geom_sf(data = buffer_3, fill = NA, color = "green", linetype = "dashed", linewidth = 0.5) +
    geom_sf(data = buffer_1, fill = NA, color = "blue", linetype = "solid", linewidth = 0.5) +
    geom_sf(data = campus_pt, shape = 21, fill = "black", color = "white", size = 3) +
    labs(
      title = paste0("Real Rent Growth vs Expected near ", campus_name),
      subtitle = "Inflation-adjusted (5% annual benchmark, 2015-2025)",
      caption = "Red = higher than expected, Blue = lower than expected"
    ) +
    theme_minimal()

  print(p)
}
```

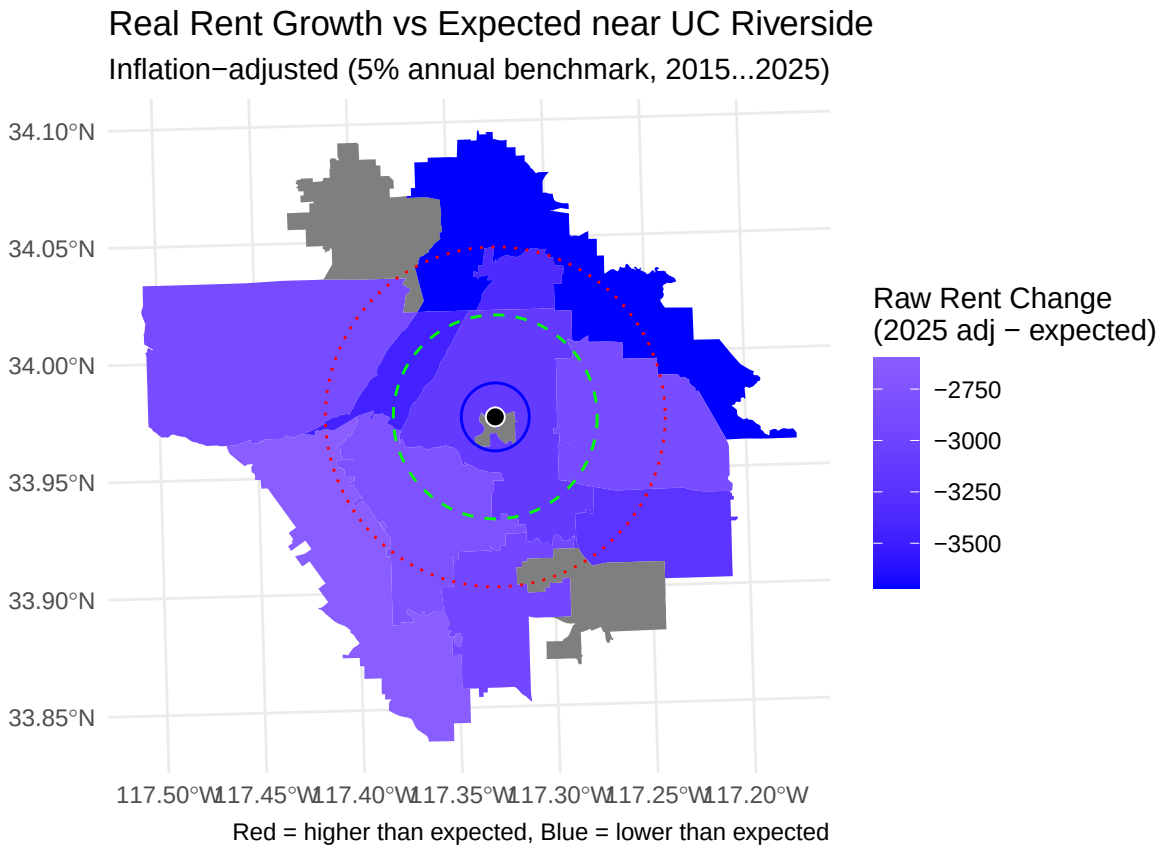


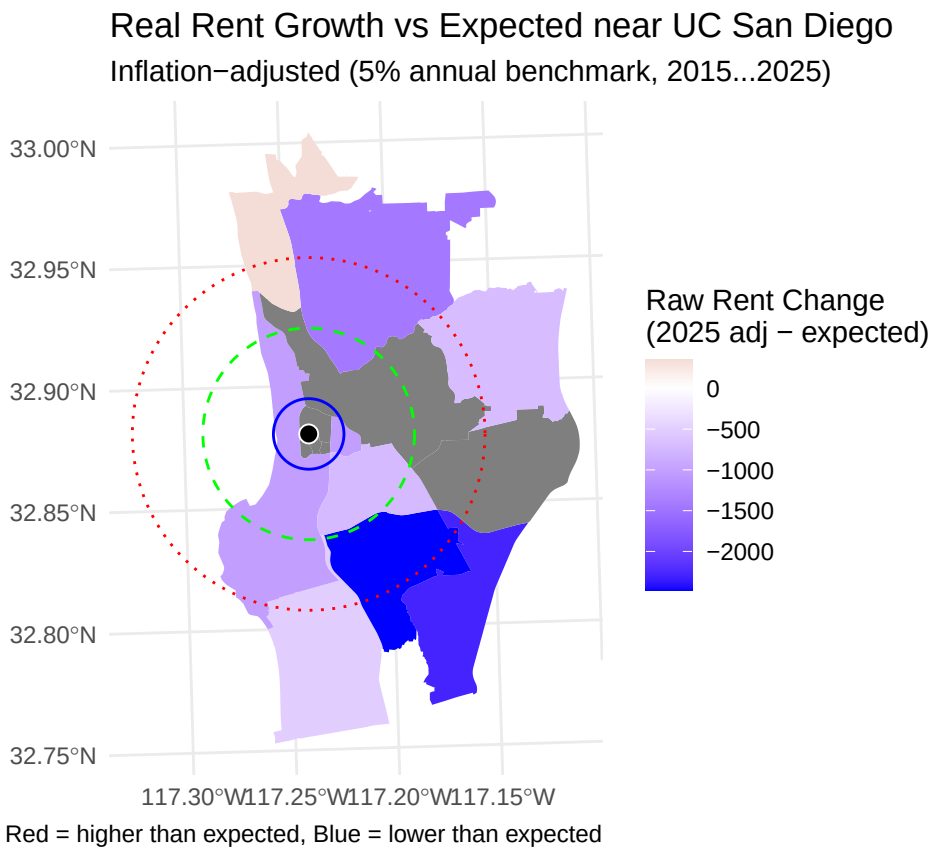

Real Rent Growth vs Expected near UC Davis
Inflation−adjusted (5% annual benchmark, 2015...2025)
38.8°N
38.7°N
38.6°N
38.5°N
38.4°N
38.3°N
122.1°W
122.0°W
121.9°W
121.8°W
121.7°W
121.6°W
Raw Rent Change
(2025 adj − expected)
−2600
−2800
−3000
−3200
Red = higher than expected, Blue = lower than expected

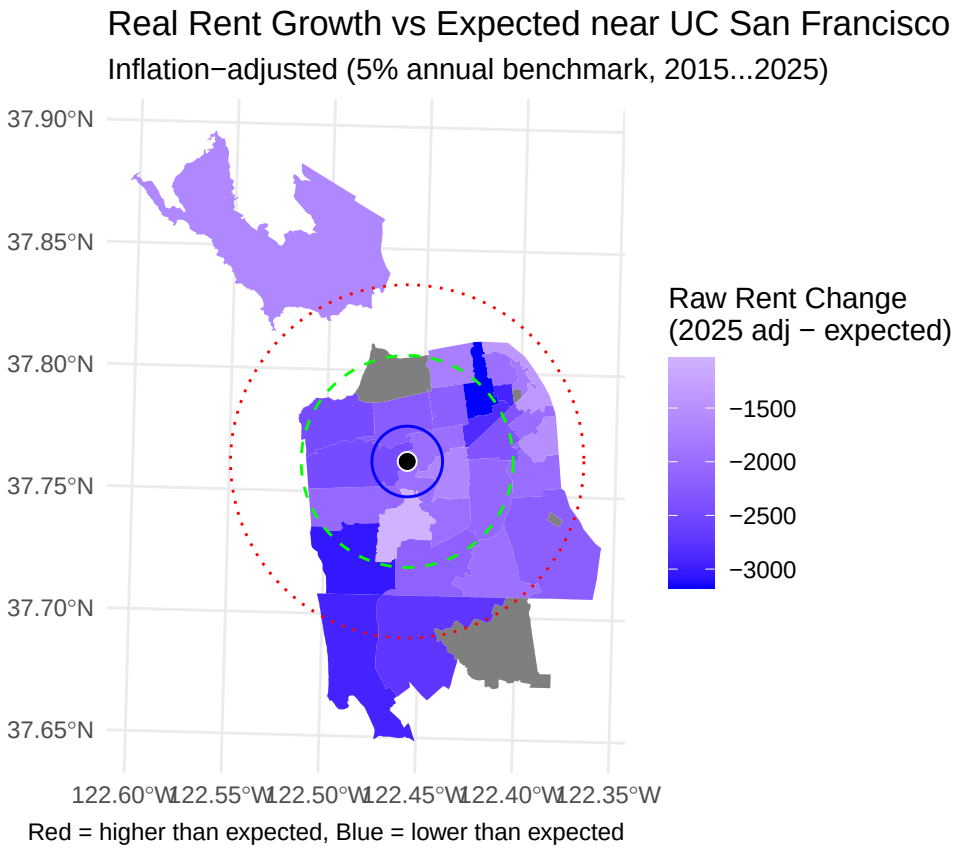

Real Rent Growth vs Expected near UC Irvine
Inflation−adjusted (5% annual benchmark, 2015...2025)
33.80°N
33.75°N
33.70°N
33.65°N
33.60°N
33.55°N
33.50°N
117.95°W
117.90°W
117.85°W
117.80°W
117.75°W
117.70°W
Raw Rent Change
(2025 adj − expected)
2000
0
−2000
Red = higher than expected, Blue = lower than expected

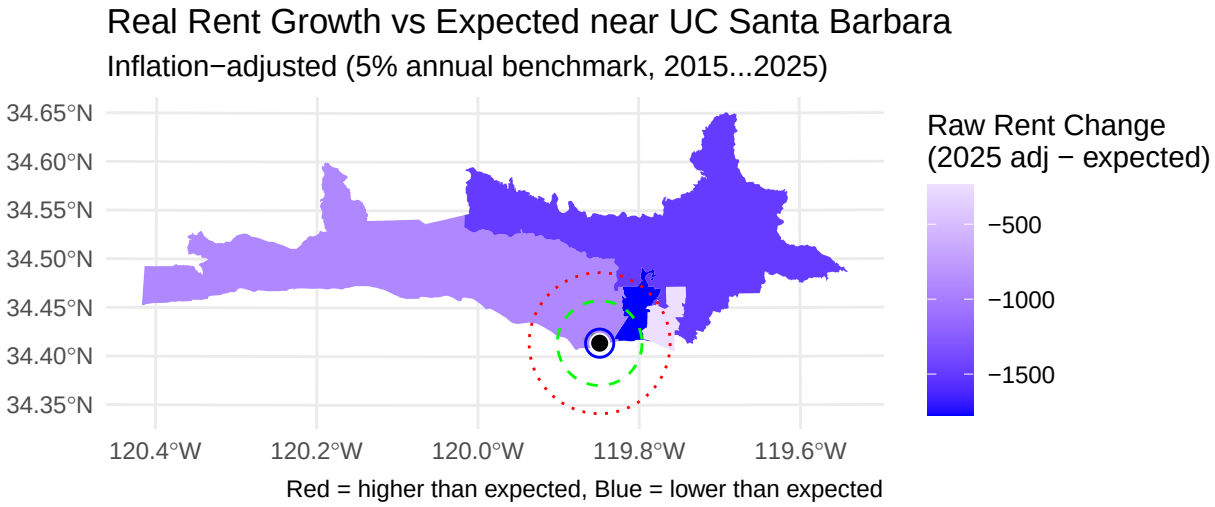

Real Rent Growth vs Expected near UCLA
Inflation−adjusted (5% annual benchmark, 2015...2025)
34.15°N
34.10°N
34.05°N
34.00°N
118.60°W
118.55°W
118.50°W
118.45°W
118.40°W
118.35°W
118.30°W
Raw Rent Change
(2025 adj − expected)
2000
0
−2000
Red = higher than expected, Blue = lower than expected

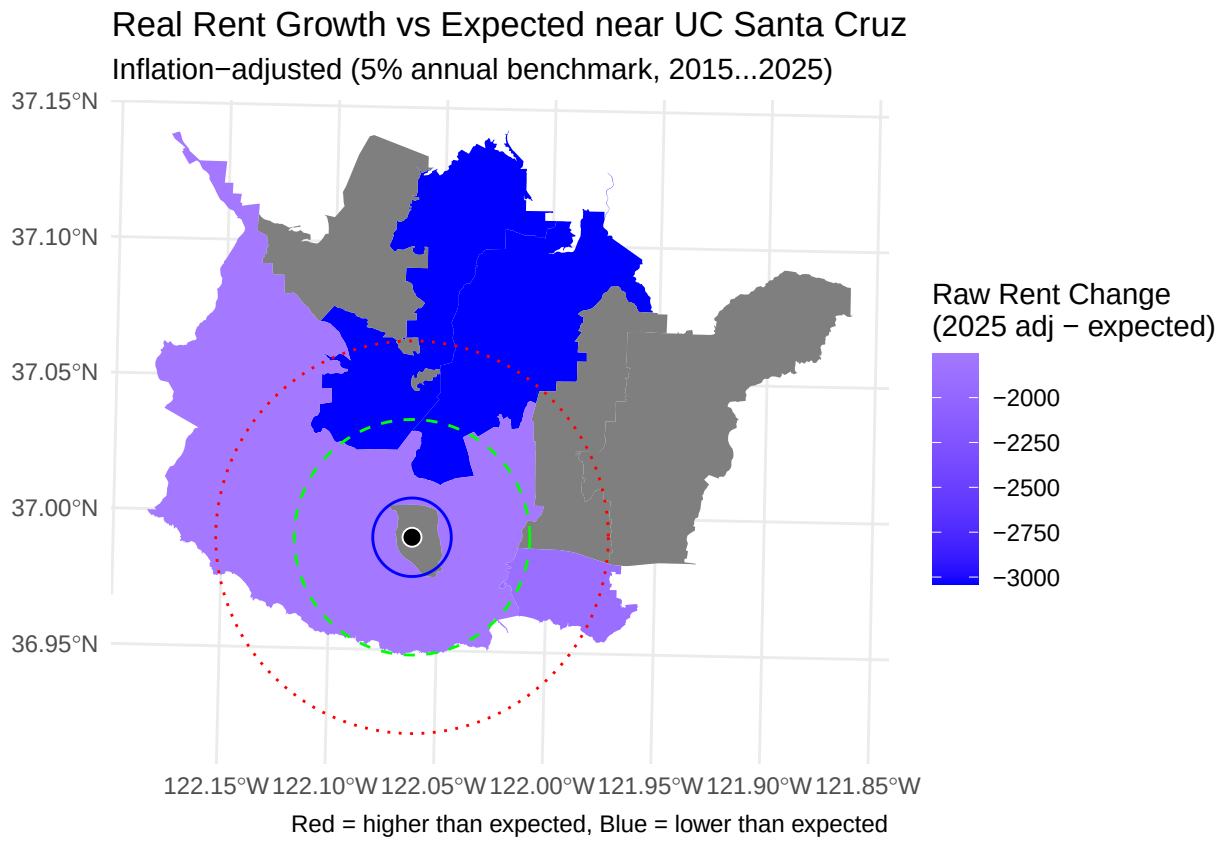

Real Rent Growth vs Expected near UC Merced
Inflation−adjusted (5% annual benchmark, 2015...2025)
37.6°N
37.5°N
37.4°N
37.3°N
37.2°N
120.6°W
120.5°W
120.4°W
120.3°W
Raw Rent Change
(2025 adj − expected)
−3510
−3520
−3530
−3540
−3550
−3560
Red = higher than expected, Blue = lower than expected


Real Rent Growth vs Expected near UC Riverside
Inflation−adjusted (5% annual benchmark, 2015...2025)
34.10°N
34.05°N
34.00°N
33.95°N
33.90°N
33.85°N
117.50°W
117.45°W
117.40°W
117.35°W
117.30°W
117.25°W
117.20°W
Red = higher than expected, Blue = lower than expected
Raw Rent Change
(2025 adj − expected)
−2750
−3000
−3250
−3500


Real Rent Growth vs Expected near UC San Diego
Inflation−adjusted (5% annual benchmark, 2015...2025)
33.00°N
32.95°N
32.90°N
32.85°N
32.80°N
32.75°N
117.30°W
117.25°W
117.20°W
117.15°W
Raw Rent Change
(2025 adj − expected)
0
−500
−1000
−1500
−2000
Red = higher than expected, Blue = lower than expected


Real Rent Growth vs Expected near UC San Francisco
Inflation−adjusted (5% annual benchmark, 2015...2025)
37.90°N
37.85°N
37.80°N
37.75°N
37.70°N
37.65°N
122.60°W
122.55°W
122.50°W
122.45°W
122.40°W
122.35°W
Raw Rent Change
(2025 adj − expected)
−1500
−2000
−2500
−3000
Red = higher than expected, Blue = lower than expected


Real Rent Growth vs Expected near UC Santa Barbara
Inflation−adjusted (5% annual benchmark, 2015...2025)
34.65°N
34.60°N
34.55°N
34.50°N
34.45°N
34.40°N
34.35°N
120.4°W
120.2°W
120.0°W
119.8°W
119.6°W
Raw Rent Change
(2025 adj − expected)
−500
−1000
−1500
Red = higher than expected, Blue = lower than expected



adjusted for inflation, rent increase, with percentage changes

```
options(tigris_use_cache = TRUE)
rent_data <- read_csv("clean_california_zillow_rent.csv") %>%
  filter(!is.na(RentIndex)) %>%
  mutate(ZIPCode = str_pad(as.character(ZIPCode), 5, pad = "0"))


# Step 1: Separate 2015 and 2025 data
rent_2015 <- rent_data %>%
  filter(Date == "2015-01-31") %>%
  select(ZIPCode, RentIndex_2015 = RentIndex)

rent_2025 <- rent_data %>%
  filter(Date == "2025-01-31") %>%
  select(ZIPCode, RentIndex_2025 = RentIndex)


# Step 2: Join the datasets by ZIP code
rent_joined <- inner_join(rent_2015, rent_2025, by = "ZIPCode") %>%
  mutate(
    RentIndex_2025_adj = RentIndex_2025 / (1.05 ^ 10),
    Expected_2025 = RentIndex_2015 * (1.05 ^ 10),
```

```
    Diff_vs_expected = RentIndex_2025 - Expected_2025
  )
zip_shapes <- zctas(cb = FALSE, starts_with = "9") %>%
  st_transform(3310) %>% st_simplify(dTolerance = 100)

# Check ZIP format
zip_shapes$ZCTA5CE20 <- as.character(zip_shapes$ZCTA5CE20)

common_zips <- intersect(unique(zip_shapes$ZCTA5CE20), unique(rent_joined$ZIPCode))
length(common_zips)
```

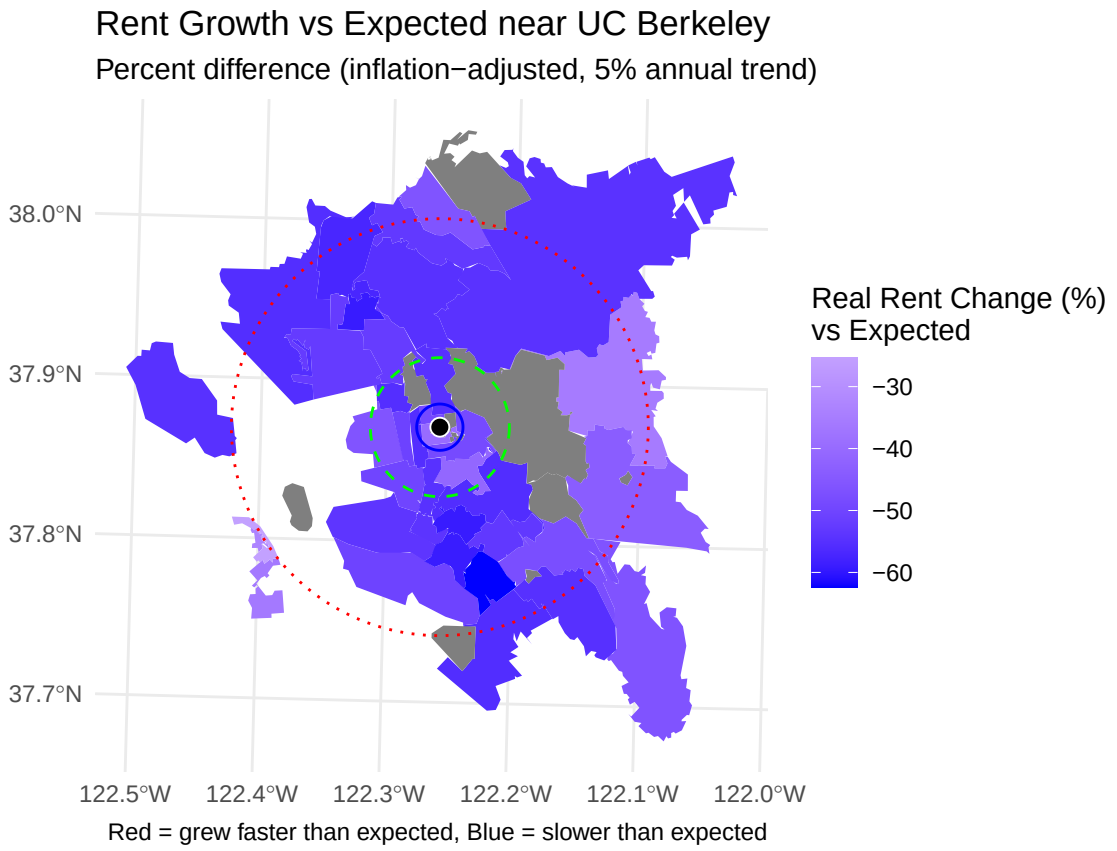
```
## [1] 898
```

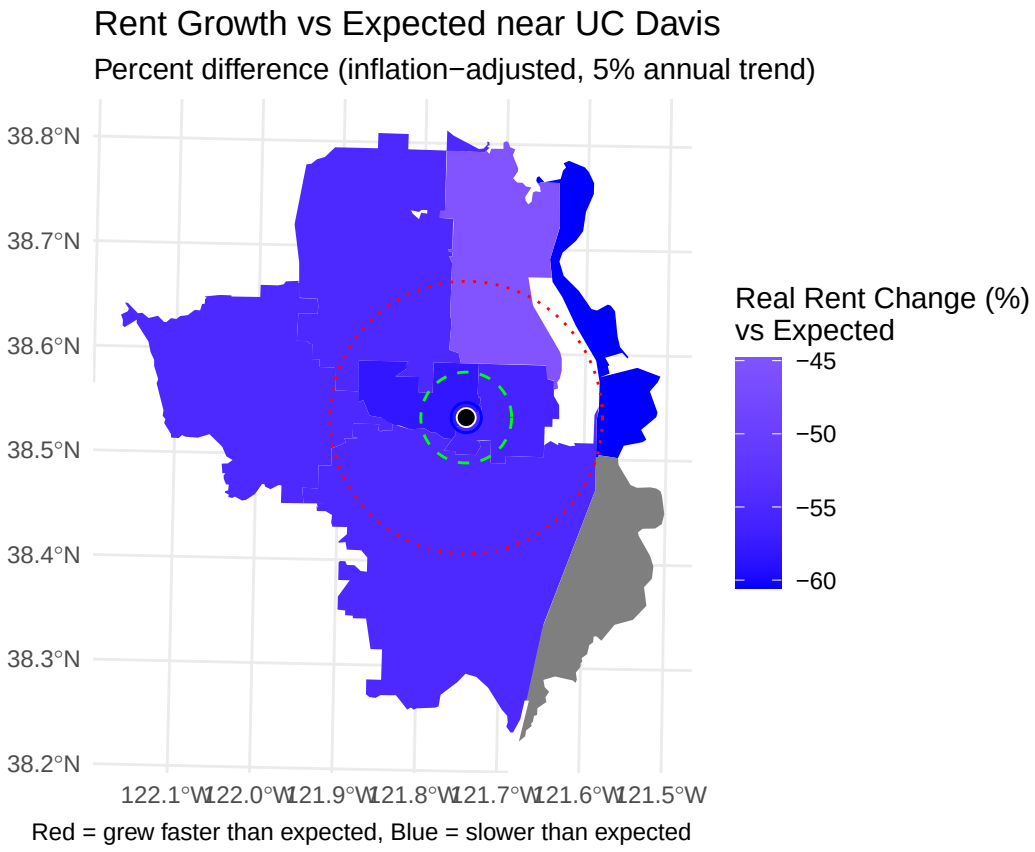
```
head(common_zips)
```

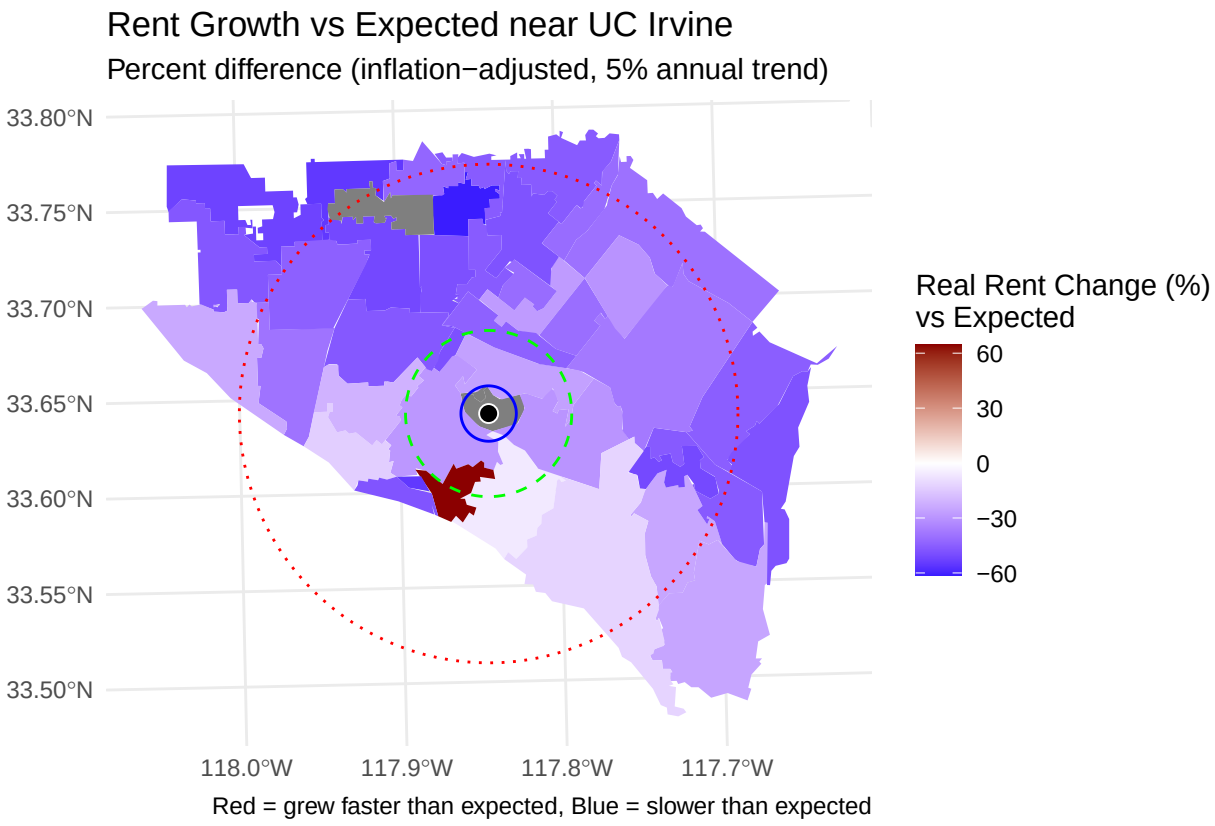
```
## [1] "94587" "95126" "90602" "95130" "95035" "92657"
```

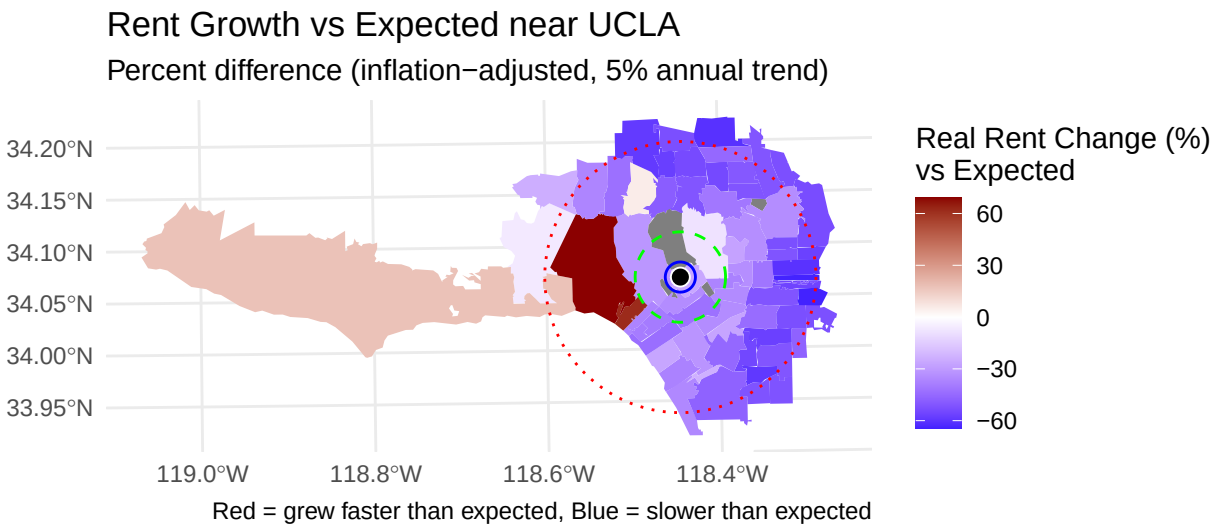
```
# Step 3: Adjust 2025 rent for inflation (CPI from BLS or estimate)
# https://www.bls.gov/regions/mid-atlantic/data/consumerpriceindexhistorical_us_table.htm
cpi_2015 <- 233.707
cpi_2025 <- 317.67
inflation_adjustment <- 1 + ((cpi_2025 - cpi_2015) / cpi_2015)

# Step 4: Compute expected rent under 5% annual increase
rent_joined <- rent_joined %>%
  mutate(
    Expected_2025 = RentIndex_2015 * (1 + 0.05)^10 * inflation_adjustment,
    Diff_vs_expected = RentIndex_2025 - Expected_2025,
    PercentDiff_vs_expected = 100 * (Diff_vs_expected) / Expected_2025
  )


# Step 5: Join with spatial ZIPs
zip_shapes$ZCTA5CE20 <- as.character(zip_shapes$ZCTA5CE20)
rent_joined$ZIPCode <- as.character(rent_joined$ZIPCode)

# Join with ZIP shapefile
rent_diff_sf <- left_join(zip_shapes, rent_joined, by = c("ZCTA5CE20" = "ZIPCode"))

for (i in 1:nrow(uc_sf)) {
  campus_name <- uc_sf$Campus[i]
  campus_pt <- uc_sf[i, ]

  buffer_1 <- st_buffer(campus_pt, 1609)
  buffer_3 <- st_buffer(campus_pt, 1609 * 3)
  buffer_5 <- st_buffer(campus_pt, 1609 * 9)

  # Filter nearby ZIPs for joined inflation-adjusted data
  zip_nearby <- rent_diff_sf[st_intersects(rent_diff_sf, buffer_5, sparse = FALSE), ]

  # Plot actual vs expected difference
  p <- ggplot() +
```

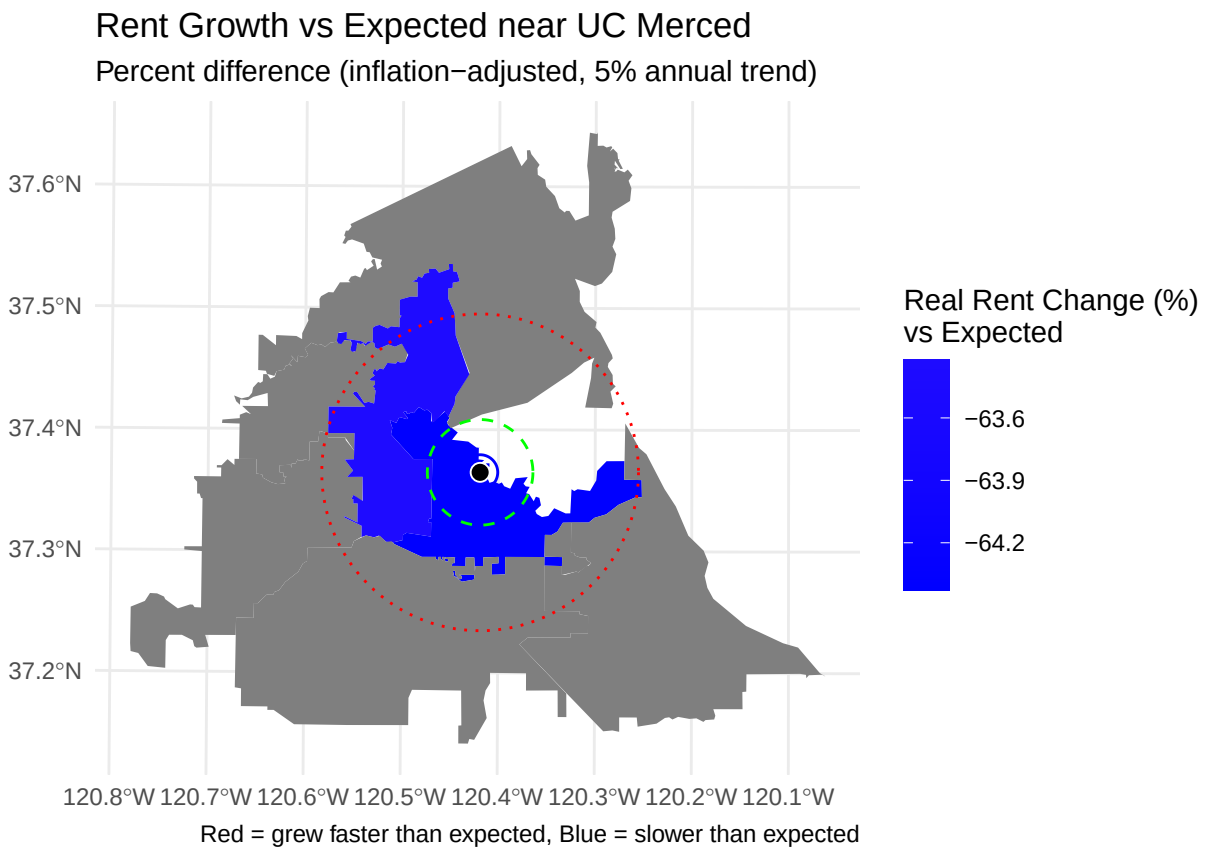
```
  geom_sf(data = zip_nearby, aes(fill = PercentDiff_vs_expected), color = NA) +
  scale_fill_gradient2(
    low = "blue", mid = "white", high = "darkred",
    midpoint = 0,
    name = "Real Rent Change (%)\nvs Expected"
  ) +
  geom_sf(data = buffer_5, fill = NA, color = "red", linetype = "dotted", linewidth = 0.5) +
  geom_sf(data = buffer_3, fill = NA, color = "green", linetype = "dashed", linewidth = 0.5) +
  geom_sf(data = buffer_1, fill = NA, color = "blue", linetype = "solid", linewidth = 0.5) +
  geom_sf(data = campus_pt, shape = 21, fill = "black", color = "white", size = 3) +
  labs(
    title = paste0("Rent Growth vs Expected near ", campus_name),
    subtitle = "Percent difference (inflation-adjusted, 5% annual trend)",
    caption = "Red = grew faster than expected, Blue = slower than expected"
  ) +
  theme_minimal()


  print(p)
}
```

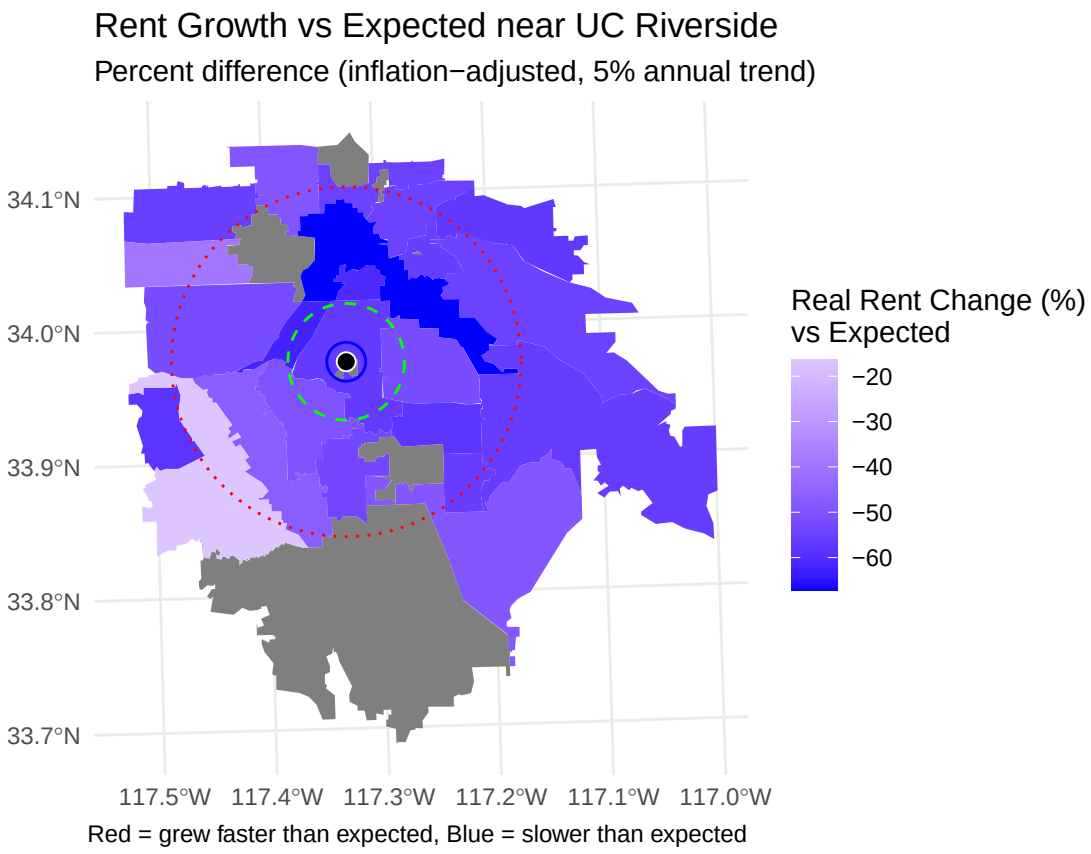


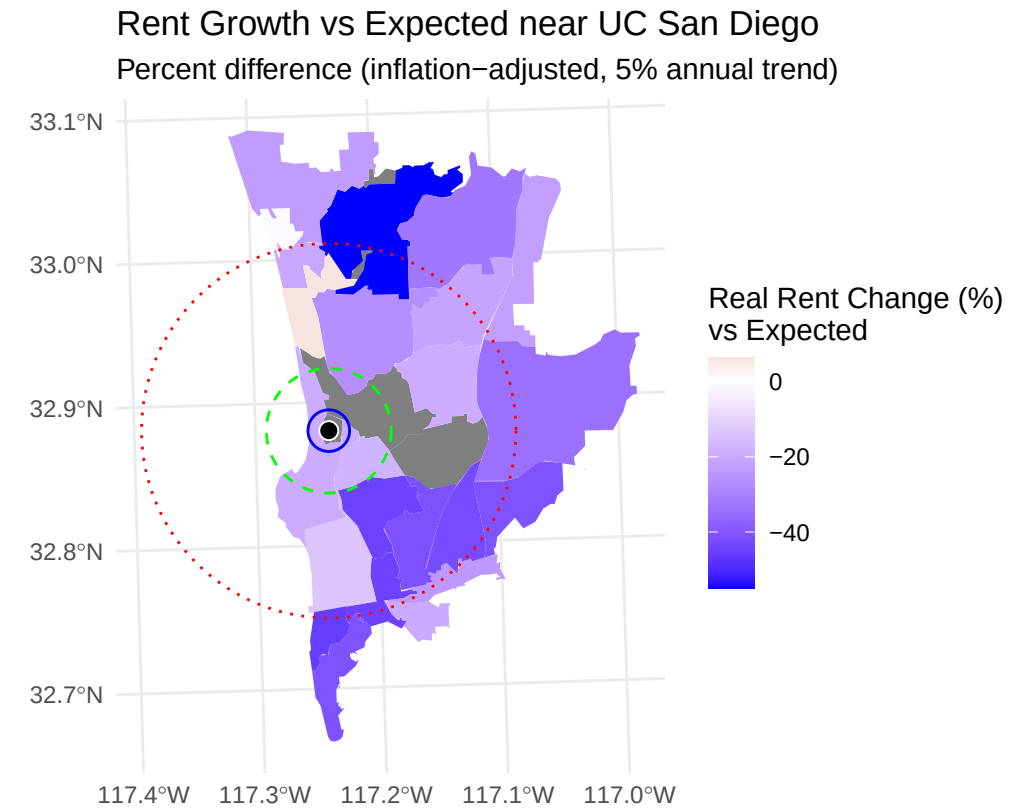

Rent Growth vs Expected near UC Davis
Percent difference (inflation−adjusted, 5% annual trend)
38.8°N
38.7°N
38.6°N
38.5°N
38.4°N
38.3°N
38.2°N
122.1°W
122.0°W
121.9°W
121.8°W
121.7°W
121.6°W
121.5°W
Real Rent Change (%)
vs Expected
−45
−50
−55
−60
Red = grew faster than expected, Blue = slower than expected

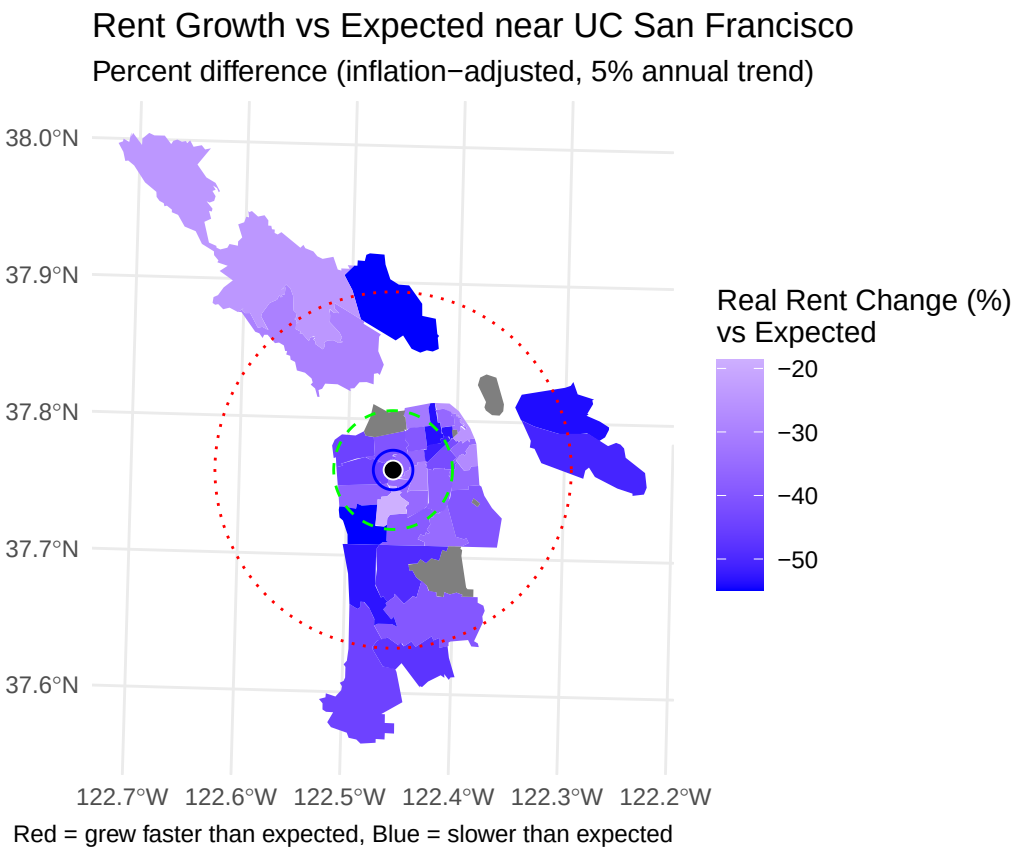

Rent Growth vs Expected near UC Irvine
Percent difference (inflation−adjusted, 5% annual trend)
33.80°N
33.75°N
33.70°N
33.65°N
33.60°N
33.55°N
33.50°N
118.0°W
117.9°W
117.8°W
117.7°W
Real Rent Change (%) vs Expected
60
30
0
−30
−60
Red = grew faster than expected, Blue = slower than expected

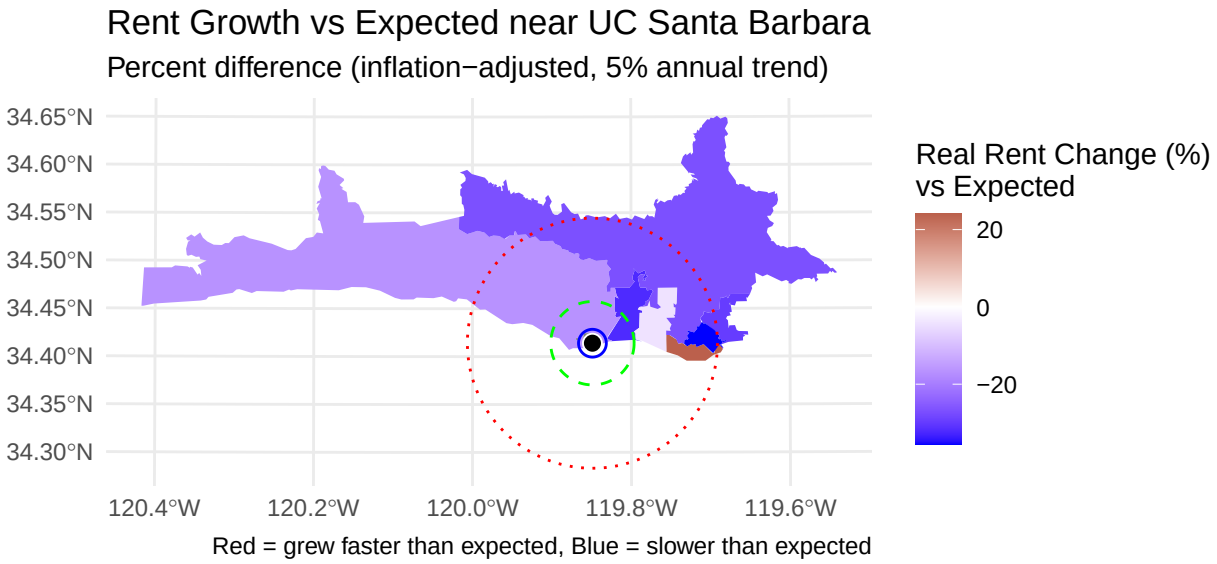

Rent Growth vs Expected near UCLA
Percent difference (inflation−adjusted, 5% annual trend)
34.20°N
34.15°N
34.10°N
34.05°N
34.00°N
33.95°N
119.0°W
118.8°W
118.6°W
118.4°W
Red = grew faster than expected, Blue = slower than expected
Real Rent Change (%)
vs Expected
60
30
0
−30
−60

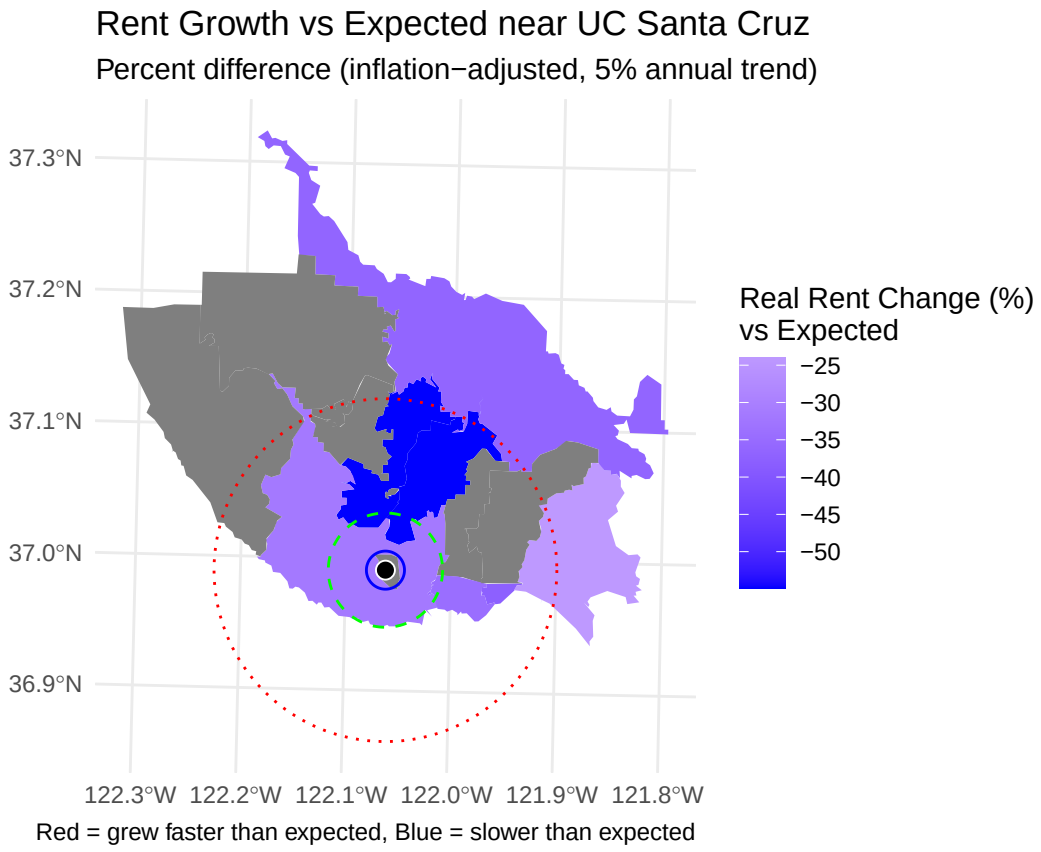

Rent Growth vs Expected near UC Merced
Percent difference (inflation−adjusted, 5% annual trend)
37.6°N
37.5°N
37.4°N
37.3°N
37.2°N
120.8°W 120.7°W 120.6°W 120.5°W 120.4°W 120.3°W 120.2°W 120.1°W
Red = grew faster than expected, Blue = slower than expected
Real Rent Change (%)
vs Expected
−63.6
−63.9
−64.2


Rent Growth vs Expected near UC Riverside
Percent difference (inflation−adjusted, 5% annual trend)
34.1°N
34.0°N
33.9°N
33.8°N
33.7°N
117.5°W
117.4°W
117.3°W
117.2°W
117.1°W
117.0°W
Real Rent Change (%)
vs Expected
−20
−30
−40
−50
−60
Red = grew faster than expected, Blue = slower than expected


Rent Growth vs Expected near UC San Diego
Percent difference (inflation−adjusted, 5% annual trend)
33.1°N
33.0°N
32.9°N
32.8°N
32.7°N
117.4°W
117.3°W
117.2°W
117.1°W
117.0°W
Real Rent Change (%)
vs Expected
0
−20
−40
Red = grew faster than expected, Blue = slower than expected


Rent Growth vs Expected near UC San Francisco
Percent difference (inflation−adjusted, 5% annual trend)
38.0°N
37.9°N
37.8°N
37.7°N
37.6°N
122.7°W
122.6°W
122.5°W
122.4°W
122.3°W
122.2°W
Real Rent Change (%)
vs Expected
−20
−30
−40
−50
Red = grew faster than expected, Blue = slower than expected


Rent Growth vs Expected near UC Santa Barbara
Percent difference (inflation−adjusted, 5% annual trend)
34.65°N
34.60°N
34.55°N
34.50°N
34.45°N
34.40°N
34.35°N
34.30°N
120.4°W
120.2°W
120.0°W
119.8°W
119.6°W
Red = grew faster than expected, Blue = slower than expected
Real Rent Change (%) vs Expected
20
0
−20


Rent Growth vs Expected near UC Santa Cruz
Percent difference (inflation−adjusted, 5% annual trend)
37.3°N
37.2°N
37.1°N
37.0°N
36.9°N
122.3°W
122.2°W
122.1°W
122.0°W
121.9°W
121.8°W
Real Rent Change (%)
vs Expected
−25
−30
−35
−40
−45
−50
Red = grew faster than expected, Blue = slower than expected