COVID-19 Vaccination Data Repository Snowflake Job Aid Frequently Used SQL Queries

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Background

This document contains example code for local health jurisdictions to run SQL queries in Snowflake for COVID-19 vaccine information. The SQL queries can help facilitate state and county data comparisons and reconciliations.

LHJ Data Sources in CA_VACCINE

Configure your settings in Snowflake to the following and select one of the views from the table below, depending on your analytic needs:

Role: CA_LHJ_RO (selection may vary by user)
Database: CA_VACCINE
Schema: PUBLIC
View:

Views	Description
VW_ALL_IIS_LHJ	Dose-level view of all COVID-19 vaccinations reported to the California Immunization Registry
VW_ALL_ IIS_RECIPIENTS_LHJ	Recipient-level view of COVID-19 vaccine recipients
VW_DERIVED_FED_OVERALL_BY_COUNTY_DEMOGRAPHICS	Aggregate vaccine administration data for federal agencies reporting directly to CDC
VW_GC_LHJ_DOSE_ADMIN_ADDRESS	Dose-level geocoded addresses for vaccine administrators
VW_GC_LHJ_DOSE_RECIP_ADDRESS	Dose-level geocoded addresses for vaccine recipients
VW_GC_LHJ_RECIP_ADMIN_ADDRESS	Recipient-level geocoded addresses for vaccine administrators
VW_GC_LHJ_RECIP_RECIP_ADDRESS	Recipient-level geocoded addresses for vaccine recipients
VW_GIS_ALL_ADDRESS	All addresses, vaccine administrators and recipients, geocoded

SQL Query Examples

Below are some examples of SQL queries that can be used with the PUBLIC views in Snowflake. Inserting a double hyphen (--) in the beginning of a line makes the line a comment; any text between -- and the end of the line will be ignored and will not be evaluated in the query. To include the line in the query, delete the double hyphen.

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Counts

1. Total COVID-19 doses administered statewide:

```
select
    count(distinct vax_event_id)
from
    "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_LHJ";
```

2. Total COVID-19 doses administered by county:

```
select
    recip_county_label as RecipCounty,
    --admin_county_label as AdminCounty,
    --mixed_county as MixedCounty,
    count(distinct vax_event_id)
from
    "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_LHJ"
group by
    1;
```

3. **Total COVID-19 doses administered by zip code:**

```
select
    recip_address_zip as RecipZIP,
    --admin_address_zip as AdminZIP,
    --mixed_zip as MixedZIP,
    count(distinct vax_event_id)
from
    "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_LHJ"
group by
    1;
```

4. **Total COVID-19 doses by manufacturer or dose number:**

```
select
    vax_label as Manufacturer,
    --dose_num,
    count(distinct vax_event_id) as Doses
from
    "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_LHJ"
group by
    1
order by
    1;
```

5. **Total persons vaccinated by Vaccine Equity Metric quartile and county:**

```
select
```

```
   hpiquartile as VEM,
   HPI_COUNTY_RCP_ZIP as Recipient_County,
   count(distinct recip_id) as Persons
from
   "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_RECIPIENTS_LHJ"
group by
   1, 2
order by
   1, 2;
```

6. **Total persons vaccinated with at least one COVID-19 vaccine dose by county:**

```
select
   recip_county_label as RecipCounty,
   --admin_county_label as AdminCounty,
   --mixed_county as MixedCounty,
   count(distinct recip_id) as Persons
from
   "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_RECIPIENTS_LHJ"
group by
   1
order by
   1;
```

7. **Total persons fully or partially vaccinated by county:**

```
select
   recip_county_label as RecipCounty,
   --admin_county_label as AdminCounty,
   --mixed_county as MixedCounty,
   count(distinct recip_id) as Persons
from
   "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_RECIPIENTS_LHJ"
where
   fully_vaccinated=1        --fully vaccinated
   --fully_vaccinated=0      --partially vaccinated
group by
   1
order by
   1;
```

8. **To see persons who received a J&J dose:**

```
select
   distinct recip_id,
   recip_first_name,
   recip_last_name,
```

```
    recip_dob
from
    "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_RECIPIENTS_LHJ"
where
    vax_received like '%J&J%';
```

9. **To count total persons who received only one dose of Pfizer or Moderna vaccine:**

```
select
    mixed_county,
    vax_received,
    count(distinct recip_id) as Persons
from
    "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_RECIPIENTS_LHJ"
where
  (
    (VAX_RECEIVED like 'Pfizer')
    or (VAX_RECEIVED like 'Moderna')
  )
  and not (
    DS1_ORIG_DOSE_NUM = '2'
    and DS2_VAX_EVENT_ID is null
  )                                       --only has single dose labeled as dose
  2
  and DS2_ADMIN_DATE is null              --does not have two doses
  --and mixed_county=''                    --county filter
group by
    1, 2
order by
    1, 2;
```

10. **To count fully or partially vaccinated persons by VEM quartile or age group:**

```
select
    hpiquartile as VEM,
    --hpiquartile_rcp_zip as VEM_Recip,
    --recip_age_group,
    count(distinct recip_id) as Persons
from
    "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_RECIPIENTS_LHJ"
where
    fully_vaccinated = 1           --fully vaccinated
    --fully_vaccinated = 0          --partially vaccinated
    --and mixed_county = ''         --county filter
group by
    1
```

```
order by
   1;
```

11. To count total persons by vaccination status and user-defined age group:

```
select
   count(distinct recip_id) as Persons
from
   "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_RECIPIENTS_LHJ"
where
   fully_vaccinated = 1                    --fully vaccinated
   and recip_age between 12 and 15        --age filter
;
```

12. To count total persons by VEM quartile, county, and vaccination status:

```
select
   HPIQUARTILE as VEM,
   HPI_COUNTY_RCP_ZIP as Recipient_County,
   count(distinct recip_id) as Persons
from
   "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_RECIPIENTS_LHJ"
where
   fully_vaccinated = 1           --fully vaccinated
   --fully_vaccinated = 0         --partially vaccinated
group by
   1, 2
order by
   1, 2;
```

13. To count total federal agency administrations by county and age group:

```
select
   COUNTY,
   DEMOGRAPHIC_CATEGORY,
   DEMOGRAPHIC_VALUE,
   CUMULATIVE_TOTAL_DOSES
from

   "CA_VACCINE"."PUBLIC"."VW_DERIVED_FED_OVERALL_BY_COUNTY_DEMOGRAPHICS"
where
   COUNTY = 'Alameda'
   and DEMOGRAPHIC_CATEGORY = 'Age Group';
```

14. To count total federal agency administrations by county and race/ethnicity:

```
select
   COUNTY,
   DEMOGRAPHIC_CATEGORY,
   DEMOGRAPHIC_VALUE,
   CUMULATIVE_TOTAL_DOSES
from

"CA_VACCINE"."PUBLIC"."VW_DERIVED_FED_OVERALL_BY_COUNTY_DEMOGRAPHICS"
where
   COUNTY = 'Alameda'
   and DEMOGRAPHIC_CATEGORY = 'Race/Ethnicity';
```

15. To see booster rate* by county:

```
with elig_recipient as (
     select
   mixed_county as county,
   count(recip_id) as eligible_recipient_count
        from
   "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_RECIPIENTS_LHJ"
        where  is_booster_eligible=1
        group by 1 order by 1
),

booster_recip as
(
select mixed_county county,count (distinct a.bridge_recip_id) as measure_value
     from "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_LHJ" a
     inner join (select bridge_recip_id, max(admin_date) admin_date
        from  "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_LHJ"
        where (is_additional_dose_and_24_days = 1 or is_additional_dose_and_52_days
= 1  or bivalent_booster = 1) and admin_date >= '2021-08-13' group          by 1) b
     on a.bridge_recip_id=b.bridge_recip_id and a.admin_date=b.admin_date and
(is_additional_dose_and_24_days = 1 or is_additional_dose_and_52_days = 1 or
bivalent_booster = 1)
     group by 1
)

select
   a.county,
   eligible_Recipient_count as Booster_Eligible_Population,
   measure_value as Booster_Recipients,
   measure_value/eligible_recipient_count as booster_rate
from
```

```
   elig_recipient a
   left join booster_recip b on a.county = b.county
order by
   1;
```

* Booster dose recipients are defined here as individuals who received a dose at least 24 days after primary series completion since August 13, 2021. This metric includes both individuals who received booster doses and individuals who received additional doses. Booster eligible recipients include individuals 5 years and older who completed a primary series of an approved or authorized COVID-19 vaccine and are eligible to receive a booster based on the recommended vaccination schedule.

16. **To see booster recipients:**

```
select
a.mixed_county
,count(distinct a.bridge_recip_id) booster_count
from "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_LHJ" a
join (select bridge_recip_id, max(admin_date) admin_date
        from "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_LHJ"
where (is_additional_dose_and_24_days = 1 or is_additional_dose_and_52_days = 1 or
BIVALENT_BOOSTER = 1) and admin_date >= '2021-08-13' group by 1) b
        on a.bridge_recip_id=b.bridge_recip_id and a.admin_date=b.admin_date and
(is_additional_dose_and_24_days = 1 or is_additional_dose_and_52_days = 1 or
BIVALENT_BOOSTER = 1)
group by 1;
```

17. **To count bivalent recipients:**

```
select a.mixed_county
,count(distinct a.bridge_recip_id) bivalent_booster_count
from "CA_VACCINE"."PUBLIC"."”VW_ALL_IIS_LHJ" a
join (select bridge_recip_id, max(admin_date) admin_date
        from "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_LHJ"
        where BIVALENT_BOOSTER = 1 and admin_date >= '2021-08-13' group by 1) b
        on a.bridge_recip_id=b.bridge_recip_id and a.admin_date=b.admin_date and
(BIVALENT_BOOSTER = 1)
group by 1;+
```

18. **Booster recipients count by age group:**

```
with recip_age_lhj as
(
 select floor(months_between(admin_date, recip_dob)/12)  as recip_age,
 case
   when recip_dob = '1900-01-01' or recip_age > 130  or DATEDIFF(DAY,recip_dob,
admin_date) < 60 then 'Unknown Agegroup'
```

```sql
    when recip_age < 5 then 'Under 5'
    when recip_age between 5 and 11 then '5-11'
    when recip_age between 12 and 17 then '12-17'
    when recip_age between 18 and 49 then '18-49'
    when recip_age between 50 and 64 then '50-64'
    when recip_age >= 65 then '65+'
    else 'Unknown Agegroup'
  end as recip_age_group,* from "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_LHJ"
)

,elig_recipient as (
select  recip_age_group,
    count(recip_id) as eligible_recipient_count
        from
    "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_RECIPIENTS_LHJ"
        where  is_booster_eligible=1
        group by 1 order by 1
)

,booster_recip as
(
  select recip_age_group,count(distinct a.bridge_recip_id) as measure_value
     from recip_age_lhj a
     inner join (select bridge_recip_id, max(admin_date) admin_date
        from  recip_age_lhj
        where (is_additional_dose_and_24_days = 1 or is_additional_dose_and_52_days
= 1  or bivalent_booster = 1) and admin_date >= '2021-08-13' group          by 1) b
     on a.bridge_recip_id=b.bridge_recip_id and a.admin_date=b.admin_date and
(is_additional_dose_and_24_days = 1 or is_additional_dose_and_52_days = 1 or
bivalent_booster = 1)
     group by 1
)

select a.recip_age_group,  eligible_Recipient_count as Booster_Eligible_Population,
    measure_value as Booster_Recipients,
    measure_value/eligible_recipient_count as booster_rate
from
    elig_recipient a
    left join booster_recip b on a.recip_age_group = b.recip_age_group
order by
    1;
```

Joins

19. Join dose-level data to geocoded addresses for vaccine administrators:

```
select da.VAX_EVENT_ID,
    da.BRIDGE_RECIP_ID,
    da.RECIP_ID,
    da.RESPONSIBLE_ORG,
    da.ADMIN_NAME,
    ADMIN_GC_INPUT_ADDR,
    ADMIN_GC_STATUS,
    ADMIN_GC_SCORE,
    ADMIN_GC_MATCH_TYPE,
    ADMIN_GC_MATCH_ADDR,
    ADMIN_GC_ADDR_TYPE,
    ADMIN_GC_MATCH_ADDR_ZIP,
    ADMIN_GC_BLOCKGROUP,
    ADMIN_GC_BLOCKGROUP10,
    ADMIN_GC_COUNTYNAME,
    ADMIN_GC_SCHOOLDISTRICT,
    ADMIN_GC_US_CONGRESSDISTRICT,
    ADMIN_GC_CA_ASSEMBLY,
    ADMIN_GC_CA_SENATE,
    ADMIN_GC_SHAPE,
    ADMIN_GC_LONG,
    ADMIN_GC_LAT
from
    "CA_VACCINE"."PUBLIC"."VW_GC_LHJ_DOSE_ADMIN_ADDRESS" da
    join "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_LHJ" lhj_dose
    on da.VAX_EVENT_ID=lhj_dose.VAX_EVENT_ID
    and da.BRIDGE_RECIP_ID=lhj_dose.BRIDGE_RECIP_ID;
```

20. Join dose-level data to geocoded addresses for vaccine recipients:

```
select dr.VAX_EVENT_ID,
    dr.BRIDGE_RECIP_ID,
    dr.RECIP_ID,
    RECIP_GC_INPUT_ADDR,
    RECIP_GC_STATUS,
    RECIP_GC_SCORE,
    RECIP_GC_MATCH_TYPE,
    RECIP_GC_MATCH_ADDR,
    RECIP_GC_ADDR_TYPE,
    RECIP_GC_MATCH_ADDR_ZIP,
    RECIP_GC_BLOCKGROUP,
    RECIP_GC_BLOCKGROUP10,
```

```
        RECIP_GC_COUNTYNAME,
        RECIP_GC_SCHOOLDISTRICT,
        RECIP_GC_US_CONGRESSDISTRICT,
        RECIP_GC_CA_ASSEMBLY,
        RECIP_GC_CA_SENATE,
        RECIP_GC_SHAPE,
        RECIP_GC_LONG,
        RECIP_GC_LAT
    from
        "CA_VACCINE"."PUBLIC"."VW_GC_LHJ_DOSE_RECIP_ADDRESS" dr
        join "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_LHJ" lhj_dose
        on dr.VAX_EVENT_ID=lhj_dose.VAX_EVENT_ID
        and dr.BRIDGE_RECIP_ID=lhj_dose.BRIDGE_RECIP_ID;
```

21. Join recipient-level data to geocoded addresses for vaccine administrators:

```
select ra.RECIP_ID,
    ra.RESPONSIBLE_ORG,
    ra.ADMIN_NAME,
    ra.ADMIN_ADDRESS_STATE,
    ADMIN_GC_INPUT_ADDR,
    ADMIN_GC_STATUS,
    ADMIN_GC_SCORE,
    ADMIN_GC_MATCH_TYPE,
    ADMIN_GC_MATCH_ADDR,
    ADMIN_GC_ADDR_TYPE,
    ADMIN_GC_MATCH_ADDR_ZIP,
    ADMIN_GC_BLOCKGROUP,
    ADMIN_GC_BLOCKGROUP10,
    ADMIN_GC_COUNTYNAME,
    ADMIN_GC_SCHOOLDISTRICT,
    ADMIN_GC_US_CONGRESSDISTRICT,
    ADMIN_GC_CA_ASSEMBLY,
    ADMIN_GC_CA_SENATE,
    ADMIN_GC_SHAPE,
    ADMIN_GC_LONG,
    ADMIN_GC_LAT
from
    "CA_VACCINE"."PUBLIC"."VW_GC_LHJ_RECIP_ADMIN_ADDRESS" ra
    join "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_RECIPIENTS_LHJ" lhj_recip
    on  ra.RECIP_ID=lhj_recip.RECIP_ID;
```

22. Join recipient-level data to geocoded addresses for vaccine recipients:

```
select rr.RECIP_ID,
    RECIP_GC_INPUT_ADDR,
```

```
        GC_INPUT_ADDR,
        RECIP_GC_STATUS,
        RECIP_GC_SCORE,
        RECIP_GC_MATCH_TYPE,
        RECIP_GC_MATCH_ADDR,
        RECIP_GC_ADDR_TYPE,
        RECIP_GC_MATCH_ADDR_ZIP,
        RECIP_GC_BLOCKGROUP,
        RECIP_GC_BLOCKGROUP10,
        RECIP_GC_COUNTYNAME,
        RECIP_GC_SCHOOLDISTRICT,
        RECIP_GC_US_CONGRESSDISTRICT,
        RECIP_GC_CA_ASSEMBLY,
        RECIP_GC_CA_SENATE,
        RECIP_GC_SHAPE,
        RECIP_GC_LONG,
        RECIP_GC_LAT
    from
        "CA_VACCINE"."PUBLIC"."VW_GC_LHJ_RECIP_RECIP_ADDRESS" rr
        join "CA_VACCINE"."PUBLIC"."VW_ALL_IIS_RECIPIENTS_LHJ" lhj_recip
        on rr.RECIP_ID=lhj_recip.RECIP_ID;
```

References

The data dictionaries for VW_ALL_IIS_LHJ and VW_ALL_IIS_RECIPIENTS_LHJ can be found on the [CAIR Resources Website](#).