

## SQL Queries for KEPH 1 Kericho County Dataset

### A. Basic Data Exploration

#### i. Geographic distribution of households

##### a. Count of households by sub-county

```
SELECT sub_county, COUNT(*) AS total_household_counts
FROM kericho_community_health_data
GROUP BY sub_county
ORDER BY total_household_counts DESC;
```

	sub_county	total_household_counts
▶	Ainamoi	870
	Kipkelion West	852
	Kipkelion East	842
	Soin-Sigowet	821
	Bureti	812
	Belgut	803

##### b. Count of households by sub-county and ward

```
SELECT sub_county, ward, COUNT(*) AS total_household_counts
FROM kericho_community_health_data
GROUP BY sub_county, ward
ORDER BY sub_county ASC;
```

	sub_county	ward	total_household_counts
▶	Ainamoi	Cheptororiet	120
	Ainamoi	Kamasian	127
	Ainamoi	Kapkugerwet	118
	Ainamoi	Kipchebor	105
	Ainamoi	Kunyak	141
	Ainamoi	Tendenno	122
	Ainamoi	Waldai	137
	Belgut	Cheptororiet	110
	Belgut	Kamasian	110
	Belgut	Kapkugerwet	119
	Belgut	Kipchebor	118

#### ii. Summary statistics

```
-- a. Overall
```

```
SELECT
```

```
    AVG(household_size) AS avg_household_size,
    MIN(household_size) AS min_household_size,
    MAX(household_size) AS max_household_size,
    AVG(children_under5) AS avg_children_under_5,
    MIN(children_under5) AS min_children_under_5,
    MAX(children_under5) AS max_children_under_5,
    AVG(women_reproductive_age) AS avg_women_reproductive_age,
    MIN(women_reproductive_age) AS min_women_reproductive_age,
    MAX(women_reproductive_age) AS max_women_reproductive_age
```

```
FROM kericho_community_health_data;
```

	avg_household_size	min_household_size	max_household_size	avg_children_under_5	min_children_under_5	max_children_under_5	avg_women_reproductive_age	min_women_reproductive_age	max_women_reproductive_age
▶	5.0386	2	8	1.4922	0	3	0.9972	0	2

```
-- b. By sub-county
```

```
SELECT
```

```
    sub_county AS county,
    AVG(household_size) AS avg_household_size,
    MIN(household_size) AS min_household_size,
    MAX(household_size) AS max_household_size,
    AVG(children_under5) AS avg_children_under_5,
    MIN(children_under5) AS min_children_under_5,
    MAX(children_under5) AS max_children_under_5,
    AVG(women_reproductive_age) AS avg_women_reproductive_age,
    MIN(women_reproductive_age) AS min_women_reproductive_age,
    MAX(women_reproductive_age) AS max_women_reproductive_age
```

```
FROM kericho_community_health_data
```

```
GROUP BY sub_county
```

```
ORDER BY sub_county;
```

	county	avg_household_size	min_household_size	max_household_size	avg_children_under_5	min_children_under_5	max_children_under_5	avg_women_reproductive_age	min_women_reproductive_age	max_women_reproductive_age
▶	Ainamoi	5.0644	2	8	1.4322	0	3	1.0011	0	2
	Belgut	5.0075	2	8	1.5230	0	3	0.9875	0	2
	Bureti	4.9631	2	8	1.4926	0	3	0.9532	0	2
	Kipkelion East	5.0736	2	8	1.4501	0	3	1.0273	0	2
	Kipkelion West	4.9930	2	8	1.5059	0	3	1.0258	0	2
	Soin-Sigowet	5.1279	2	8	1.5542	0	3	0.9854	0	2

### iii. Resource distribution

#### a. Water source types

```
-- -Overall
```

```
SELECT water_source, ROUND(100.0 * COUNT(*) /
    (SELECT COUNT(*) FROM kericho_community_health_data),2) AS percentage
FROM kericho_community_health_data
GROUP BY water_source;
```

	water_source	percentage
►	Piped	40.80
	Protected well	28.78
	River	19.82
	Rainwater	10.60

```
-- -By sub_county
SELECT
    sub_county,
    water_source,
    ROUND(100.0 * count / total, 2) AS percentage
FROM (
    SELECT
        sub_county,
        water_source,
        COUNT(*) AS count,
        SUM(COUNT(*)) OVER (PARTITION BY sub_county) AS total
    FROM kericho_community_health_data
    GROUP BY sub_county, water_source
) AS subquery
ORDER BY sub_county, percentage DESC;
```

	sub_county	water_source	percentage
►	Ainamoi	Piped	41.15
	Ainamoi	Protected well	27.47
	Ainamoi	River	23.10
	Ainamoi	Rainwater	8.28
	Belgut	Piped	38.73
	Belgut	Protected well	30.26
	Belgut	River	19.05
	Belgut	Rainwater	11.96
	Bureti	Piped	39.16
	Bureti	Protected well	28.33
	Bureti	River	19.83
	Bureti	Rainwater	12.68
	Kipkelion East	Piped	41.09
	Kipkelion East	Protected well	28.98
	Kipkelion East	River	19.36

## b. Toilet type

```
-- -Overall
SELECT toilet_type, ROUND(100.0 * COUNT(*) /
(SELECT COUNT(*) FROM kericho_community_health_data),2) AS percentage
FROM kericho_community_health_data
GROUP BY toilet_type;
```

	toilet_type	percentage
►	Pit latrine	58.96
	Flush	30.78
	None	10.26

```
-- By sub_county
SELECT
    sub_county,
    toilet_type,
    ROUND(100.0 * count / total, 2) AS percentage
FROM (
    SELECT
        sub_county,
        toilet_type,
        COUNT(*) AS count,
        SUM(COUNT(*)) OVER (PARTITION BY sub_county) AS total
    FROM kericho_community_health_data
    GROUP BY sub_county, toilet_type
) AS subquery
ORDER BY sub_county, percentage DESC;
```

	sub_county	toilet_type	percentage
►	Ainamoi	Pit latrine	58.97
	Ainamoi	Flush	31.26
	Ainamoi	None	9.77
	Belgut	Pit latrine	60.77
	Belgut	Flush	28.27
	Belgut	None	10.96
	Bureti	Pit latrine	57.88
	Bureti	Flush	31.77
	Bureti	None	10.34
	Kipkelion East	Pit latrine	59.38
	Kipkelion East	Flush	29.45
	Kipkelion East	None	11.16

### c. Handwashing facilities

```
-- Overall
SELECT handwashing_facility,
    ROUND(100.0 * COUNT(*) /
        (SELECT COUNT(*) FROM kericho_community_health_data), 2) AS percentage
FROM kericho_community_health_data
GROUP BY handwashing_facility;
```

	handwashing_facility	percentage
►	Yes	69.86
	No	30.14

```
-- By sub_county
SELECT
  sub_county,
  handwashing_facility,
  ROUND(100.0 * count / total, 2) AS percentage
FROM (
  SELECT
    sub_county,
    handwashing_facility,
    COUNT(*) AS count,
    SUM(COUNT(*)) OVER (PARTITION BY sub_county) AS total
  FROM kericho_community_health_data
  GROUP BY sub_county, handwashing_facility
) AS subquery
ORDER BY sub_county, percentage DESC;
```

	sub_county	handwashing_facility	percentage
►	Ainamoi	Yes	71.15
	Ainamoi	No	28.85
	Belgut	Yes	69.36
	Belgut	No	30.64
	Bureti	Yes	68.72
	Bureti	No	31.28
	Kipkelion East	Yes	70.07
	Kipkelion East	No	29.93
	Kipkelion West	Yes	71.01
	Kipkelion West	No	28.99
	Soin-Sigowet	Yes	68.70
	Soin-Sigowet	No	31.30

## B. Health service utilization

- a. Distribution of pregnant women attending ANC visits

```
-- Overall
SELECT
  ROUND(100.0 * SUM(CASE WHEN anc_visits >= 1 THEN 1 ELSE 0 END) /
    (SELECT SUM(pregnant_women) FROM kericho_community_health_data WHERE 1 > 0), 2) AS percentage_ANC_visits
FROM kericho_community_health_data
WHERE pregnant_women > 0;
```

	percentage_ANC_visits
▶	79.37

```
-- ii. By sub_county
SELECT
  sub_county,
  ROUND(100.0 * SUM(CASE WHEN anc_visits >= 1 THEN 1 ELSE 0 END) / COUNT(*), 2) AS percentage_ANC_visits
FROM kericho_community_health_data
WHERE pregnant_women > 0
GROUP BY sub_county
ORDER BY sub_county;
```

	sub_county	percentage_ANC_visits
▶	Ainamoi	78.41
	Belgut	76.37
	Bureti	79.02
	Kipkelion East	78.70
	Kipkelion West	80.09
	Soin-Sigowet	83.70

## b. Distribution of skilled deliveries

```
-- Overall
SELECT
  ROUND(100.0 * SUM(CASE WHEN skilled_delivery = 'Yes' THEN 1 ELSE 0 END) /
    (SELECT COUNT(*) FROM kericho_community_health_data), 2) AS skilled_delivery_percentage
FROM kericho_community_health_data;
```

	skilled_delivery_percentage
▶	83.74

```
-- By sub_county
SELECT
    sub_county,
    ROUND(100.0 * SUM(CASE WHEN skilled_delivery = 'Yes' THEN 1 ELSE 0 END) /
    COUNT(*), 2) AS skilled_delivery_percentage
FROM kericho_community_health_data
GROUP BY sub_county
ORDER BY sub_county;
```

	sub_county	skilled_delivery_percentage
▶	Ainamoi	84.83
	Belgut	84.06
	Bureti	82.02
	Kipkelion East	83.61
	Kipkelion West	82.63
	Soin-Sigowet	85.26

c. Distribution of postnatal visits

```
-- Overall
SELECT
    ROUND(100.0 * SUM(CASE WHEN postnatal_visit >= 1 THEN 1 ELSE 0 END) /
    (SELECT COUNT(*) FROM kericho_community_health_data),2) AS postnatal_visit_percentage
FROM kericho_community_health_data;
```

	postnatal_visit_percentage
▶	66.20

```
-- By sub_county
SELECT
    sub_county,
    ROUND(100.0 * SUM(CASE WHEN postnatal_visit >= 1 THEN 1 ELSE 0 END) / COUNT(*),2) AS postnatal_visit_percentage
FROM kericho_community_health_data
GROUP BY sub_county
ORDER BY sub_county;
```

	sub_county	postnatal_visit_percentage
▶	Ainamoi	66.32
	Belgut	64.01
	Bureti	66.38
	Kipkelion East	68.53
	Kipkelion West	66.55
	Soin-Sigowet	65.29

d. Average immunization coverage rates

```
-- Overall
SELECT
    ROUND(AVG(immunization_coverage),2) AS avg_immunization_coverage
FROM kericho_community_health_data;
```

	avg_immunization_coverage
▶	75.09

```
-- By sub_county
SELECT
    sub_county,
    ROUND(AVG(immunization_coverage),2) AS avg_immunization_coverage
FROM kericho_community_health_data
GROUP BY sub_county
ORDER BY sub_county;
```

	sub_county	avg_immunization_coverage
▶	Ainamoi	75.90
	Belgut	74.48
	Bureti	74.58
	Kipkelion East	75.50
	Kipkelion West	75.00
	Soin-Sigowet	75.00

e. Counts and rates of community health activities

```
SELECT
    sub_county,
    SUM(health_education_sessions) AS total_health_education_sessions,
    SUM(community_cleanups) AS total_community_cleanup_days,
    SUM(household_visits) AS total_household_visits,
    ROUND(AVG(health_education_sessions), 2) AS avg_health_education_sessions,
    ROUND(AVG(community_cleanups), 2) AS avg_community_cleanup_days,
    ROUND(AVG(household_visits), 2) AS avg_household_visits
FROM kericho_community_health_data
GROUP BY sub_county
ORDER BY sub_county;
```



## C. Disease incidence and screening

### a. Malnutrition incidences

```
-- Overall
SELECT
    SUM(malnutrition_cases) AS total_cases,
    SUM(children_under5) AS total_children_assessed,
    ROUND(((SUM(malnutrition_cases) / SUM(children_under5)) * 100), 2) AS malnutrition_rate_percent
FROM kericho_community_health_data;
```

	total_cases	total_children_assessed	malnutrition_rate_percent
►	4928	7461	66.05

```
-- By sub_county
SELECT
    sub_county,
    SUM(malnutrition_cases) AS total_cases,
    SUM(children_under5) AS at_risk_population,
    ROUND(((SUM(malnutrition_cases) / SUM(children_under5)) * 100),2) AS malnutrition_rate_percent
FROM kericho_community_health_data
GROUP BY sub_county
ORDER BY sub_county;
```

	sub_county	total_cases	at_risk_population	malnutrition_rate_percent
►	Ainamoi	868	1246	69.66
	Belgut	813	1223	66.48
	Bureti	797	1212	65.76
	Kipkelion East	834	1221	68.30
	Kipkelion West	838	1283	65.32
	Soin-Sigowet	778	1276	60.97

### b. Malaria incidences

```
-- Overall
SELECT
    (SUM(malaria_cases) / SUM(household_size)) * 1000 AS incidence_per_1000
FROM kericho_community_health_data;
```

	incidence_per_1000
▶	241.8926

```
-- By subcounty
SELECT
    sub_county,
    ROUND((SUM(malaria_cases) / SUM(household_size) * 1000),2) AS incidence_per_1000
FROM kericho_community_health_data
GROUP BY sub_county
ORDER BY sub_county;
```

	sub_county	incidence_per_1000
▶	Ainamoi	247.16
	Belgut	242.73
	Bureti	248.88
	Kipkelion East	239.70
	Kipkelion West	240.71
	Soin-Sigowet	232.30

c. TB screening rate

```
-- Overall
SELECT
    ROUND((SUM(tb_screened) / SUM(household_size)) * 100,2) AS screening_rate_percent
FROM kericho_community_health_data;
```

	screening_rate_percent
▶	49.70

d. TB incidence rate

```
-- d. TB incidence rate
-- By subcounty
SELECT
    ROUND((SUM(tb_suspected) / SUM(household_size) * 100000),2) AS incidence_per_100000
FROM kericho_community_health_data;
```

	incidence_per_100000
▶	1024.09

## D. Health Accessibility Outcome

### a. Analysis of referral made and completed

```
-- Overall
SELECT
    SUM(referrals_made) AS total_referrals_made,
    SUM(referrals_completed) AS total_referrals_completed,
    ROUND(100.0 * SUM(referrals_completed) / NULLIF(SUM(referrals_made), 0), 2) AS referral_completion_rate_percentage
FROM kericho_community_health_data
WHERE referrals_made IS NOT NULL AND referrals_completed IS NOT NULL;
```

	total_referrals_made	total_referrals_completed	referral_completion_rate_percentage
▶	7505	4957	66.05

```
-- By sub-county
SELECT
    sub_county,
    SUM(referrals_made) AS total_referrals_made,
    SUM(referrals_completed) AS total_referrals_completed,
    ROUND(100.0 * SUM(referrals_completed) / NULLIF(SUM(referrals_made), 0), 2) AS referral_completion_rate_percentage
FROM kericho_community_health_data
WHERE referrals_made IS NOT NULL AND referrals_completed IS NOT NULL
GROUP BY sub_county
ORDER BY sub_county;
```

	sub_county	total_referrals_made	total_referrals_completed	referral_completion_rate_percentage
▶	Ainamoi	1305	846	64.83
	Belgut	1166	789	67.67
	Bureti	1224	770	62.91
	Kipkelion East	1283	853	66.48
	Kipkelion West	1276	901	70.61
	Soin-Sigowet	1251	798	63.79

b. Analysis of barriers to care

```
SELECT
    barrier_to_care,
    COUNT(*) AS count,
    ROUND(100.0 * COUNT(*) /
        (SELECT COUNT(*) FROM kericho_community_health_data WHERE barrier_to_care IS NOT NULL), 2) AS percentage
FROM kericho_community_health_data
WHERE barrier_to_care IS NOT NULL
GROUP BY barrier_to_care
ORDER BY count DESC;
```

	barrier_to_care	count	percentage
►	None	2517	50.34
	Distance	1264	25.28
	Cost	717	14.34
	Attitude	502	10.04

c. Visit to Health Facilities rate

```
-- Overall
SELECT
    ROUND(100.0 * SUM(CASE WHEN visited_health_facility = 'Yes' THEN 1 ELSE 0 END) /
        SUM(household_size), 2) AS health_facility_visit_rate_per_100_people
FROM kericho_community_health_data
WHERE household_size > 0;
```

	health_facility_visit_rate_per_100_people
►	15.74

```
-- By sub-county
SELECT
    sub_county,
    ROUND(100.0 * SUM(CASE WHEN visited_health_facility = 'Yes' THEN 1 ELSE 0 END) /
        SUM(household_size), 2) AS health_facility_visit_rate_per_100_people
FROM kericho_community_health_data
WHERE household_size > 0
GROUP BY sub_county
ORDER BY sub_county;
```

	sub_county	health_facility_visit_rate_per_100_people
▶	Ainamoi	15.37
	Belgut	15.87
	Bureti	16.38
	Kipkelion East	15.19
	Kipkelion West	16.20
	Soin-Sigowet	15.51

d. Births and deaths last month as immediate health outcome

```
-- Overall
SELECT
  SUM(births_last_month) AS total_births_last_month,
  SUM(deaths_last_month) AS total_deaths_last_month,
  ROUND(1000.0 * SUM(deaths_last_month) /
  NULLIF(SUM(births_last_month), 0), 2) AS deaths_per_1000_births
FROM kericho_community_health_data
WHERE births_last_month > 0 OR deaths_last_month > 0;
```

	total_births_last_month	total_deaths_last_month	deaths_per_1000_births
▶	248	45	181.45

```
-- By sub_county
SELECT
  sub_county,
  SUM(births_last_month) AS total_births_last_month,
  SUM(deaths_last_month) AS total_deaths_last_month,
  ROUND(1000.0 * SUM(deaths_last_month) /
  NULLIF(SUM(births_last_month), 0), 2) AS deaths_per_1000_births
FROM kericho_community_health_data
WHERE births_last_month > 0 OR deaths_last_month > 0
GROUP BY sub_county
ORDER BY sub_county;
```

	sub_county	total_births_last_month	total_deaths_last_month	deaths_per_1000_births
▶	Ainamoi	49	7	142.86
	Belgut	46	6	130.43
	Bureti	27	10	370.37
	Kipkelion East	50	7	140.00
	Kipkelion West	37	5	135.14
	Soin-Sigowet	39	10	256.41

## E. Temporal and Spatial Analysis

a. Trends by data reporting month

```
-- Temporal trends
SELECT
    data_reporting_month,
    SUM(births_last_month) AS total_births,
    SUM(deaths_last_month) AS total_deaths,
    SUM(visited_health_facility) AS total_health_facility_visits,
    SUM(referrals_made) AS total_referrals_made,
    SUM(referrals_completed) AS total_referrals_completed
FROM kericho_community_health_data
GROUP BY data_reporting_month
ORDER BY data_reporting_month;
```

	data_reporting_month	total_births	total_deaths	total_health_facility_visits	total_referrals_made	total_referrals_completed
▶	2024-01	19	3	0	638	406
	2024-02	20	5	0	579	396
	2024-03	14	4	0	593	393
	2024-04	26	3	0	636	415
	2024-05	10	2	0	622	397
	2024-06	22	4	0	630	409
	2024-07	20	6	0	608	385
	2024-08	22	3	0	630	447
	2024-09	23	5	0	652	397
	2024-10	23	5	0	614	453
	2024-11	23	1	0	624	423
	2024-12	22	1	0	622	422

Result 59 ▾

```
-- Spatial-temporal analysis
SELECT
    data_reporting_month,
    sub_county,
    SUM(births_last_month) AS total_births,
    SUM(deaths_last_month) AS total_deaths,
    SUM(visited_health_facility) AS total_health_facility_visits,
    SUM(referrals_made) AS total_referrals_made,
    SUM(referrals_completed) AS total_referrals_completed
FROM kericho_community_health_data
GROUP BY data_reporting_month, sub_county
ORDER BY data_reporting_month, sub_county;
```

	data_reporting_month	sub_county	total_births	total_deaths	total_health_facility_visits	total_referrals_made	total_referrals_completed
▶	2024-01	Ainamoi	6	1	0	84	59
	2024-01	Belgut	3	2	0	111	69
	2024-01	Bureti	2	0	0	109	64
	2024-01	Kipkelion East	4	0	0	131	84
	2024-01	Kipkelion West	2	0	0	112	74
	2024-01	Soin-Sigowet	2	0	0	91	56
	2024-02	Ainamoi	2	0	0	103	60
	2024-02	Belgut	4	1	0	99	74
	2024-02	Bureti	2	0	0	109	76
	2024-02	Kipkelion East	5	2	0	82	65
	2024-02	Kipkelion West	3	1	0	88	62
	2024-02	Soin-Sigowet	4	1	0	88	58

Result 60 ×

b. Variations in health metrics by sub-county

```

SELECT
    sub_county,
    SUM(births_last_month) AS total_births,
    SUM(deaths_last_month) AS total_deaths,
    ROUND(1000.0 * SUM(deaths_last_month) /
    NULLIF(SUM(births_last_month), 0), 2) AS deaths_per_1000_births,
    SUM(visited_health_facility) AS total_health_facility_visits,
    ROUND(100.0 * SUM(referrals_completed) /
    NULLIF(SUM(referrals_made), 0), 2) AS referral_completion_rate_percentage,
    ROUND(AVG(immunization_coverage), 2) AS average_immunization_coverage,
    AVG(malnutrition_cases) AS average_malnutrition_cases
FROM kericho_community_health_data
GROUP BY sub_county
ORDER BY sub_county;

```

	sub_county	total_births	total_deaths	deaths_per_1000_births	total_health_facility_visits	referral_completion_rate_percentage	average_immunization_coverage	average_malnutrition_cases
▶	Ainamoi	49	7	142.86	0	64.83	75.90	0.9977
	Belgut	46	6	130.43	0	67.67	74.48	1.0125
	Bureti	27	10	370.37	0	62.91	74.58	0.9815
	Kipkelion East	50	7	140.00	0	66.48	75.50	0.9905
	Kipkelion West	37	5	135.14	0	70.61	75.00	0.9836
	Soin-Sigowet	39	10	256.41	0	63.79	75.00	0.9476